JUNE '58

MODERN TEXTILES MAGAZINE

Specializing in Man-Made Fibers and Blends since 1925

FIBERS

FABRICS

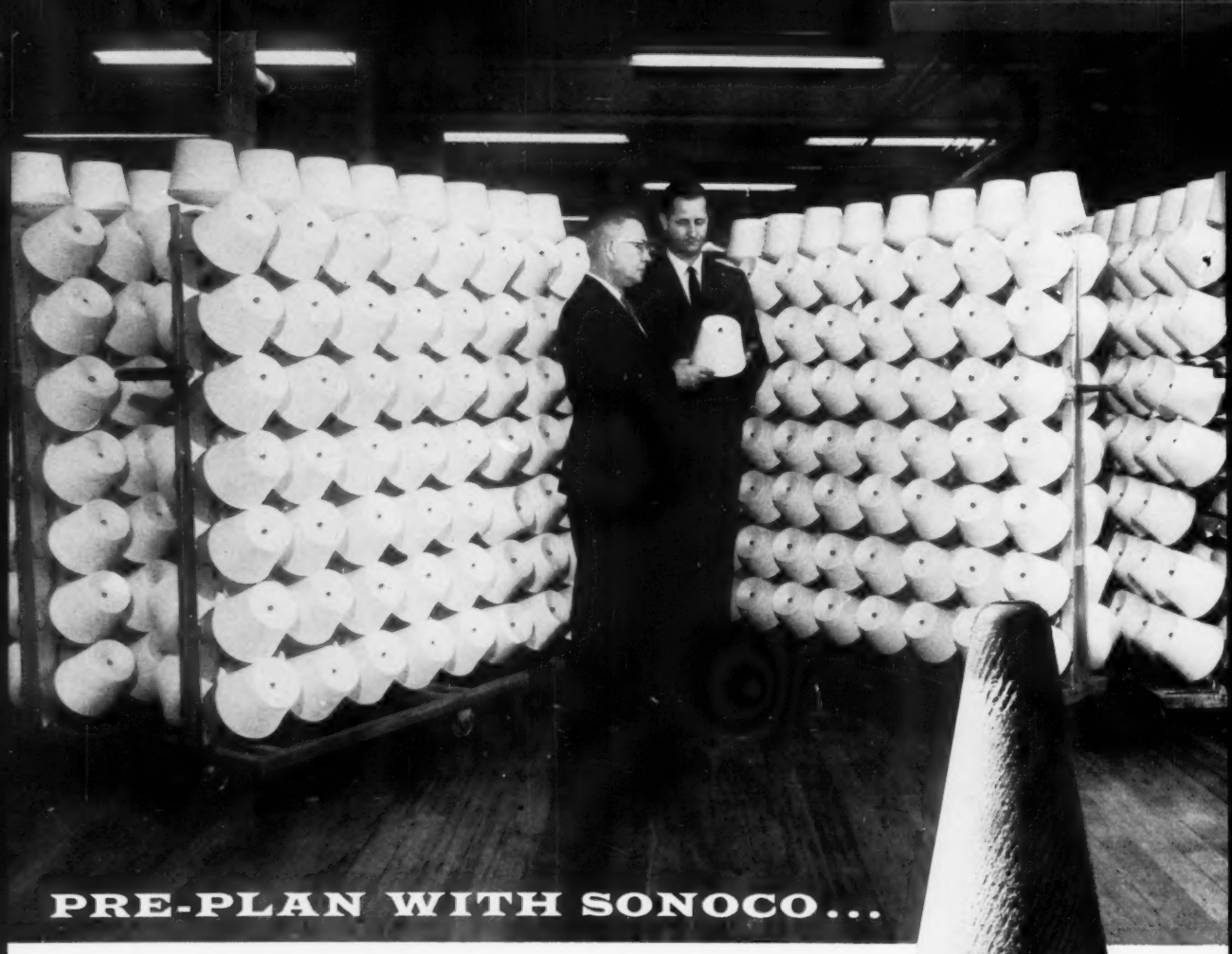
FINISHES

NAT LEAVY (left) and SIDNEY GOLDSTEIN — 25 years of pace-setting success as converters — story page 35

THIS MONTH'S SPECIAL FEATURES

Finishing cotton-rayon printcloths
Variance analysis in mill research
How to apply latex backing
Faster, better hosiery finishing

AND 12 MORE USEFUL ARTICLES AND EXCLUSIVE REPORTS



PRE-PLAN WITH SONOCO...

FOR A PERFECT PACKAGE!!

When you pre-plan with SONOCO, you get a yarn carrier best suited to your particular operation.

Typical of SONOCO specialization is the widely-accepted *Nutaper* cone with Velvet surface for winding cotton yarns. This cone provides a perfect foundation for a firm, uniform package that will deliver smoothly and evenly to the *last turn* under high speed conditions. Even with fine count yarns, the Velvet surface prevents slippage, thereby allowing a more perfect package to be built.

From SONOCO'S variety of cone surfaces you can find one to fulfill your requirements. Smooth, rough, Velvet or Unitex surfaces are available — each one developed thru extensive research and each proven in actual mill production.

Pre-plan with SONOCO for better performance. For a perfect carrier . . . call SONOCO!

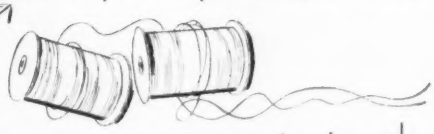
SONOCO

Products for Textiles

SONOCO PRODUCTS COMPANY

Main Office—HARTSVILLE, S. C. • MYSTIC, CONN. • AKRON, IND. • LOWELL, MASS. • PHILLIPSBURG, N. J. • LONGVIEW, TEXAS • PHILADELPHIA, PA. • LA PUENTE, CAL. • ATLANTA, GA. • GRANBY, QUEBEC • BRANTFORD, ONTARIO • MEXICO, D. F.

1462

Among the great producers of aluminum,  only Reynolds makes aluminum yarn.  Reynolds continuous research in the field  has been responsible for major product developments, all incorporated in the complete line now known as **REYMET***

Out of Reynolds pioneering comes today's brilliant and durable  Reymet Continuous Filament in Mylar†...and the latest product  development: Reymet Staple (patent applied for).

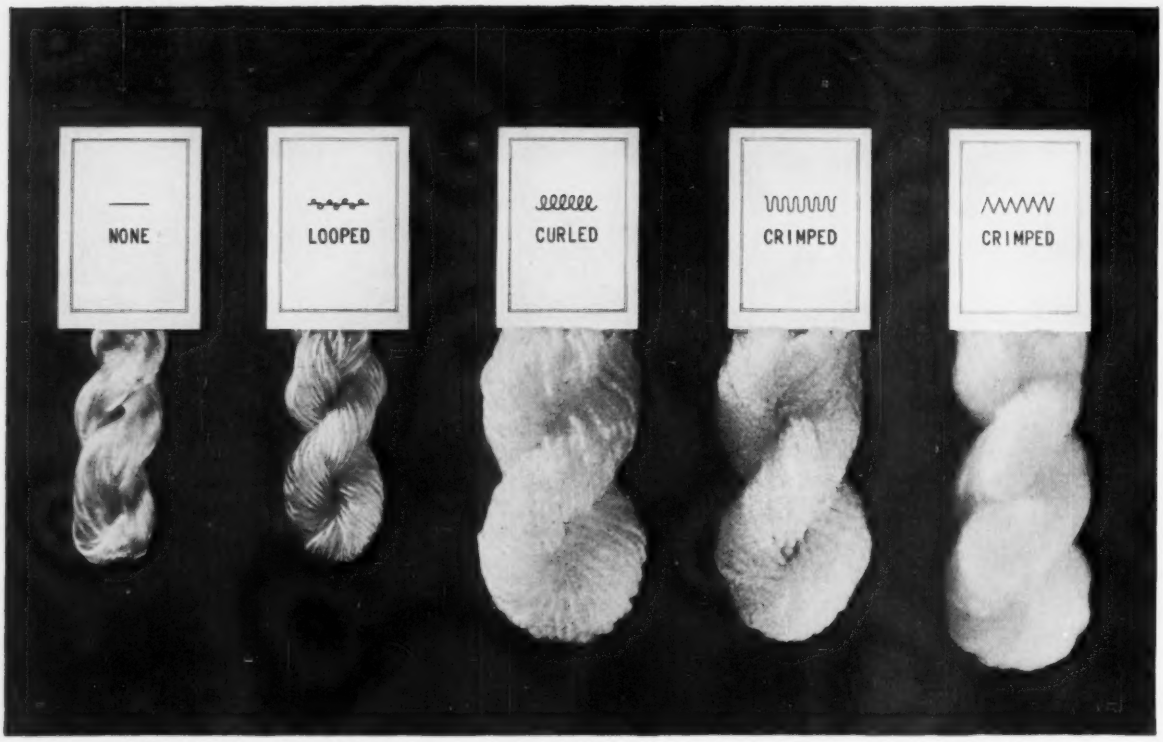
For a dependable source of dependable quality, use...

REYMET

* Registered trade mark for Reynolds Aluminum Yarn. Call any Reynolds sales office. Or write to Reynolds Metals Company, Richmond 18, Va. Canadian Representative: W. J. Westaway Company, Ltd., Hamilton, Ontario, Montreal, Quebec.

†DuPont trade mark for its Polyester film.

Watch Reynolds All-Family Television Program "DISNEYLAND", ABC-TV



60 yards of Caprolan 2100-112-0-0-HB heavy yarn which has not been texturized. Same weight, same yarn texturized by looping. Same weight, same yarn texturized by curling. Same weight, same yarn crimped by one process. Same weight, same yarn crimped by second method.

Texturized filament nylon?... What a Difference *caprolan** Makes!

Take a Look at How Caprolan Responds to Four Popular Bulking Processes!

The left-hand skein is simply 60 yards of our 2100-112-0-0-HB heavy yarn which *has not* been texturized by *any* method. To its right are four skeins of the same weight of the same yarn bulked by looping, curling and two methods of crimping.

These texturized yarns of Caprolan tell their own story!

If you are a producer of carpets, upholstery fabrics, decorative textiles, industrial fabrics or military goods, texturized filament yarns of Caprolan open a whole new world of fabric engineering and design opportunities for you. Used alone, or in combination with each other, texturized yarns should hold a high priority in your future fabric plans.

When ordering texturized filament nylon yarns, specify Caprolan, which has all the advantages of nylon plus a number of extra, important performance values!

All texturized skeins have the same number of winds and the same amount of relaxation. For further information, technical assistance or list of sources, write us today.

*caprolan** ... *the performance fiber ... by Allied Chemical*

Fiber Sales and Service Allied Chemical *National Aniline Division*

261 Madison Avenue, New York City 16, N. Y.

*Registered Trade Mark for Allied Chemical's Polyamide Fiber.

MODERN
TEXTILES MAGAZINE

June 1958 Vol. 39, No. 6

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Established 1925

* * *

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* Registered U.S. Pat. Office.

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The Principal Trade Groups

Man-Made Fiber Producers Association ..... Empire State Bldg., New York
National Federation of Textiles, Inc. ..... 389 Fifth Ave., New York
American Association of Textile Chemists and Colorists ..... Lowell Techn. Inst., Lowell, Mass.
American Association for Textile Technology, Inc. ..... 100 W. 55th St., New York
Silk and Rayon Printers and Dyers Ass'n of America, Inc. ..... 1450 Broadway, New York
Synthetic Organic Chemical Manufacturers Association ..... 41 F. 42nd St., New York
Textile Distributors Institute, Inc. ..... 469 Seventh Ave., New York
American Rayon Institute ..... 350 Fifth Avenue, New York

Departments

Zefran, Lurex Prices Now in MTM

Beginning in this issue, MODERN TEXTILES MAGAZINE publishes in its price tables which appear in our back pages, the official prices of Zefran, the new "acrylic alloy" fiber of Dow Chemical Co., and Lurex metallic yarns, made by Dobeckmun Co. An exclusive feature of MTM appearing in no other publication, these price tables will be kept up-to-date along with other prices of man-made yarns and fibers.

Dow has prepared a new booklet explaining what Zefran is, how it is made and its advantages as a textile material. *For free copies write the editors.*

Textile Machinery Show in 1960

The American Textile Machinery Association will hold its next machinery exposition two years from now on May 23-27, 1960, in the Auditorium, Atlantic City, N. J., it was announced by James H. Hunter, association president. Hunter, head of James Hunter Machine Co., said the dates were chosen to avoid conflict with textile meetings during the spring convention season. J. H. Bolton, Jr., vice president, Whitin Machine Works, is chairman of the exhibition committee. *For further information write the editors.*

Steel Heddle to Hold Product Shows

A series of product exhibits in the New England area will be held by Steel Heddle Manufacturing Co. this month. They are scheduled for June 9 and 10 at the Sheraton-Biltmore Hotel in Providence; June 12 at the Eastland Hotel in Portland; and June 13 at the Andover Inn, North Andover, Mass.

In addition to a display of the full Steel Heddle line of products, two forums will be scheduled each day to discuss the care of shuttles and reeds. All supervisors interested in the use of any product manufactured by Steel Heddle are invited to attend. The New England sales force and product engineers from Steel Heddle and Southern Shuttles Division will be available for individual discussion of mill problems. Refreshments and buffet service will be provided at lunch and dinner time.

Nylon Tires Selling Well

Nylon cord tires have assumed the top sales position in the 16,000 Pure Oil Co. service stations, according to Leo J. Spanuello, assistant merchandising manager. Pure Oil, it was reported by Du Pont's Product Information Service, started selling nylon cord tires in September, 1954. One year later Pure Oil adopted the nylon cord tires 100% in its premium and first line casings.

Tycora Carpets in Jets

When America's first commercial jet airliners go into service this Fall its interior will be carpeted and upholstered with Collins and Aikman fabrics of Tycora yarns, it was announced by Textured Yarn Co., manufacturer of all Tycora yarns. The jet airliners, to be operated by Pan American World Airways, American Airlines, Trans-Canada Airlines and Delta Airlines, will be the first commercial application of these specially processed yarns in the interior design field.

'Buy in U.S.A.' Stickers

As a service to the textile industry, Stowe-Woodward, Inc., is offering stickers which state "Whatever you buy in textiles 'made in U. S. A.' gives you quality you can trust." Small quantities of the promotion stickers are provided free of charge while large quantities for commercial use will be provided at cost. *Sample stickers and quantity prices can be secured by writing the editors.*

New word in dyeability: Zefran®

zĕf-răn

(Zĕf-răn), n. 1.

Entirely new acrylic alloy made exclusively by The Dow Chemical Company. 2. Takes unusually wide range of standard dyes (including vats). Allows greater flexibility in choice of dyestuffs than any other fiber, natural or man-made. Does not require pressure, carriers, temperature above the boil or other extreme conditions in dyeing. 3. Continuous dyeing, roller and screen printing are a natural with Zefran. This all adds up to economy in dyeing. 4. Available in 2, 3 and 6 denier staple.

Fabrics now being created by selected mills (for apparel only). For further information write The Dow Chemical Company, Textile Fibers Department, Williamsburg, Va.

You can depend on DOW®

Beaunit Changes Polyester Plans

Beaunit Mills, Inc., will not build a polyester fiber plant in Puerto Rico, as the company announced recently. (MTM p.8 Apr. '58). Instead Beaunit will install equipment in existing space at its plant in Elizabethton, Tenn., for production of a reported 10 million pounds of polyester fiber a year.

The decision not to build a plant in Puerto Rico was made known April 28 by I. Rogosin, president of Beaunit. He said that it had been found that the polyester equipment could be installed at Elizabethton at a considerable saving over the cost of building a new plant in Puerto Rico. The new Beaunit fiber will be made from resins supplied by Goodyear Tire & Rubber Co.

New Elastomer Fiber

An experimental synthetic elastomer textile fiber, designated as Fiber K, is being evaluated by Du Pont in foundation garments, surgical hose and other elastic products. The new fiber is said to have high elongation, excellent recovery, good flex life, abrasion resistance and tensile strength. It is available only in limited quantities at this time.

One of the first uses of the new elastomer yarn is reported to be in a power net combined with nylon brought out by Penn Elastic Co. Although still in the experimental stage, the new net will be introduced in an undergarment by Fortuna Foundations during this month's market week. The net is said to be light in weight and to be impervious to body acids and other things that attack natural rubber except chloride.

Avisco Pushes "Cotron"

American Viscose has broadened its advertising and promotion program for 1958. The program is aimed at bringing about closer contact with the firm's customers, increased activity in allied fields of specialized merchandising, direct mail, publicity, and trade shows, and more careful selection of media advertising.

American Viscose intends to give special exploitation to its "Cotron" fabrics. "Cotron" is the company's trademark for woven or knitted blends of Avisco rayon and cotton.

George Storm, vice president, said that cotton-rayon blends "are becoming increasingly important because of the many functional and aesthetic advantages of this combination of fibers." "Cotron" fabrics accept resin treatments readily and in the process lose less basic tensile and tear strength than 100% cottons, Storm pointed out.

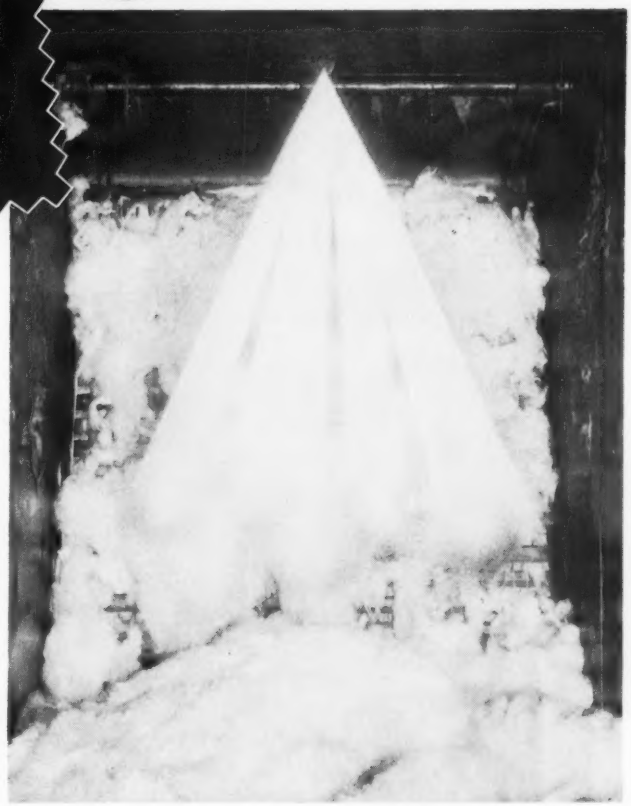
Vicara Research Option

An option which will permit study of some of the textile fiber research projects of the Virginia-Carolina Chemical Corp. has been acquired by Charles Pfizer & Co., as reported here earlier (MTM—March and May, 1958). A spokesman for Pfizer would not disclose details of the agreement. It is believed, however, that one subject under investigation is combination of zein protein, from which Vicara was made, with a synthetic polymer, with the object of obtaining a fiber with the softness of the former Vicara fiber allied with desirable properties associated with synthetic fibers. The Virginia-Carolina plant at Taftville, Conn., where Vicara was made, has been closed for more than two months.

Fibregard

Reg. U.S. Pat. Office

The Most Outstanding Lubricant You Can Use ...IF YOU'RE PROCESSING MAN-MADE FIBRES!



FIBREGARD being sprayed on at the picker. When this product is used, there will be no loading on the cards and the fibres will be bound together without becoming tacky at any time.

The only lubricant that adheres uniformly to the smooth, glassy surfaces that normally repel moisture and oily lubricants is FIBREGARD. As a result, it offers processors of synthetics many outstanding benefits.

FIBREGARD is the original colloidal lubricant . . . a smooth, viscous, flowable white cream instantly soluble in plain water, either hot or cold, hard or soft. It produces thin bodied stable emulsions that have a pH of 8.0 and it has a faint, pleasant odor.

Here's how you use FIBREGARD:

- **AS A STOCK LUBRICANT . . .**

  for synthetic fibres and blends of synthetics and wool or synthetics and cotton. It can also be used on all wool or worsted fibres.

  Any of these fibres treated with a FIBREGARD emulsion will show absolutely no loading on the cards and the fibres will be bound together without becoming tacky at any time. The stock will be lubricated uniformly and at a cost that will be lower than is practical with other stock lubricants.

- **AS A WARP SIZER, SOFTENER, BINDER . . .**

  Adding FIBREGARD in warp sizing formulas involving synthetics provides additional lubrication . . . insures a slick warp . . . and greatly increases loom efficiency. In addition it insures even sizing, slick warps, no clinging in the shed and no floats.

- **AS A CONE WINDING LUBRICANT . . .**

  FIBREGARD imparts added lubricity, prevents needle burn and also lays the barb to produce smooth yarns. In the treatment of carpet yarns made on tufting machines, this additional lubrication will increase the efficiency and production of the tufting machine.

IMMUNOL

Clean and rustproof textile equipment with non-toxic, non-flammable IMMUNOL. It replaces soaps, alkalies and compounds and does a better, faster, safer cleaning job. Ask for literature and a free sample.

Many other benefits are yours when you use FIBREGARD. Write, wire or call for technical literature and for a free sample to test on your own equipment.

HARRY MILLER CORP. HAMICO 4th & BRISTOL STREETS PHILADELPHIA 40, PA.

Manufacturers of
• GLYCOLA • POTENTOL • FIBREGARD
• REVERSOL • ACTIVOL • FIRMTAL

HARRY MILLER CORP.

Original Products and Processes Since 1936

4th and BRISTOL STS., PHILA. 40, PA.

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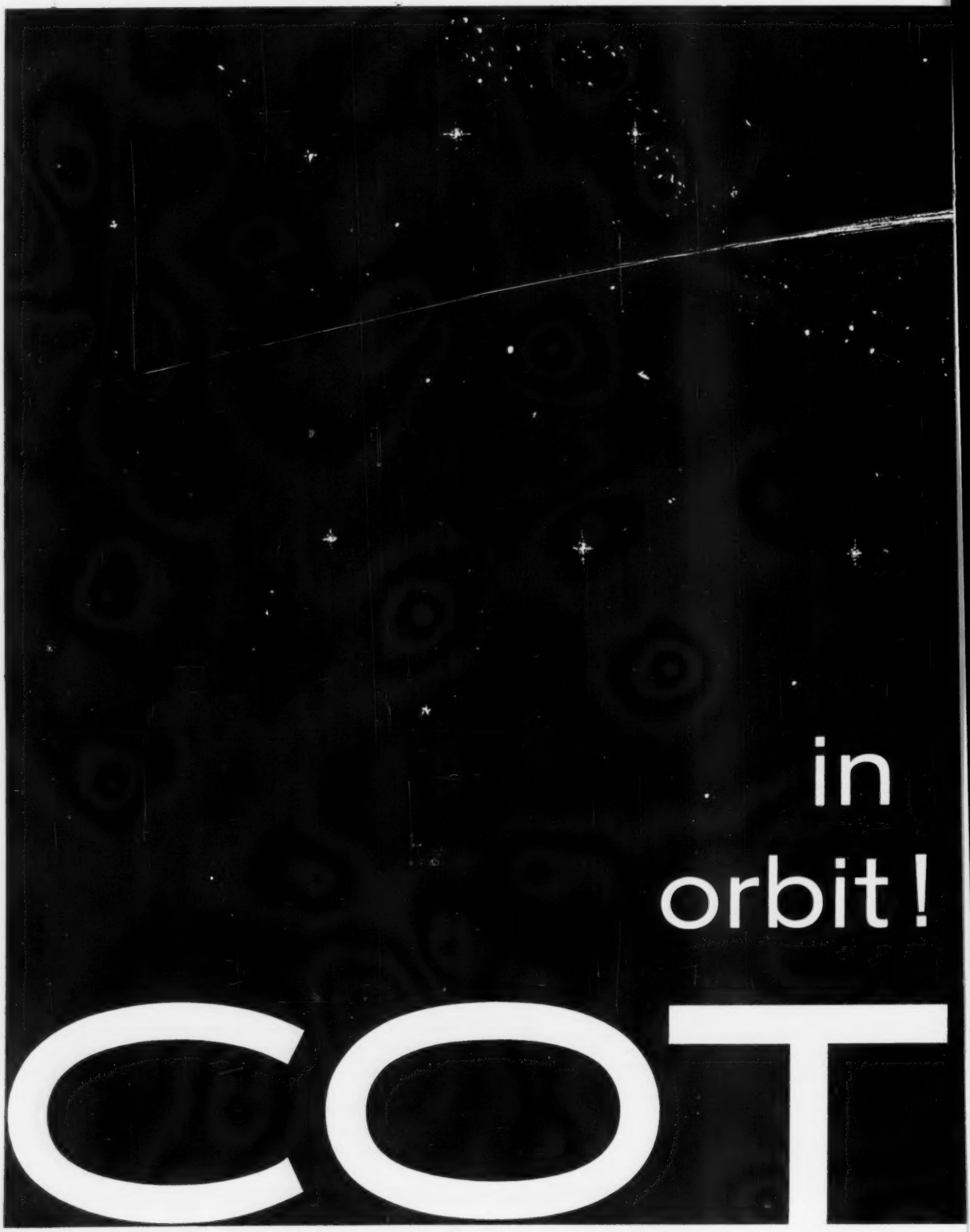
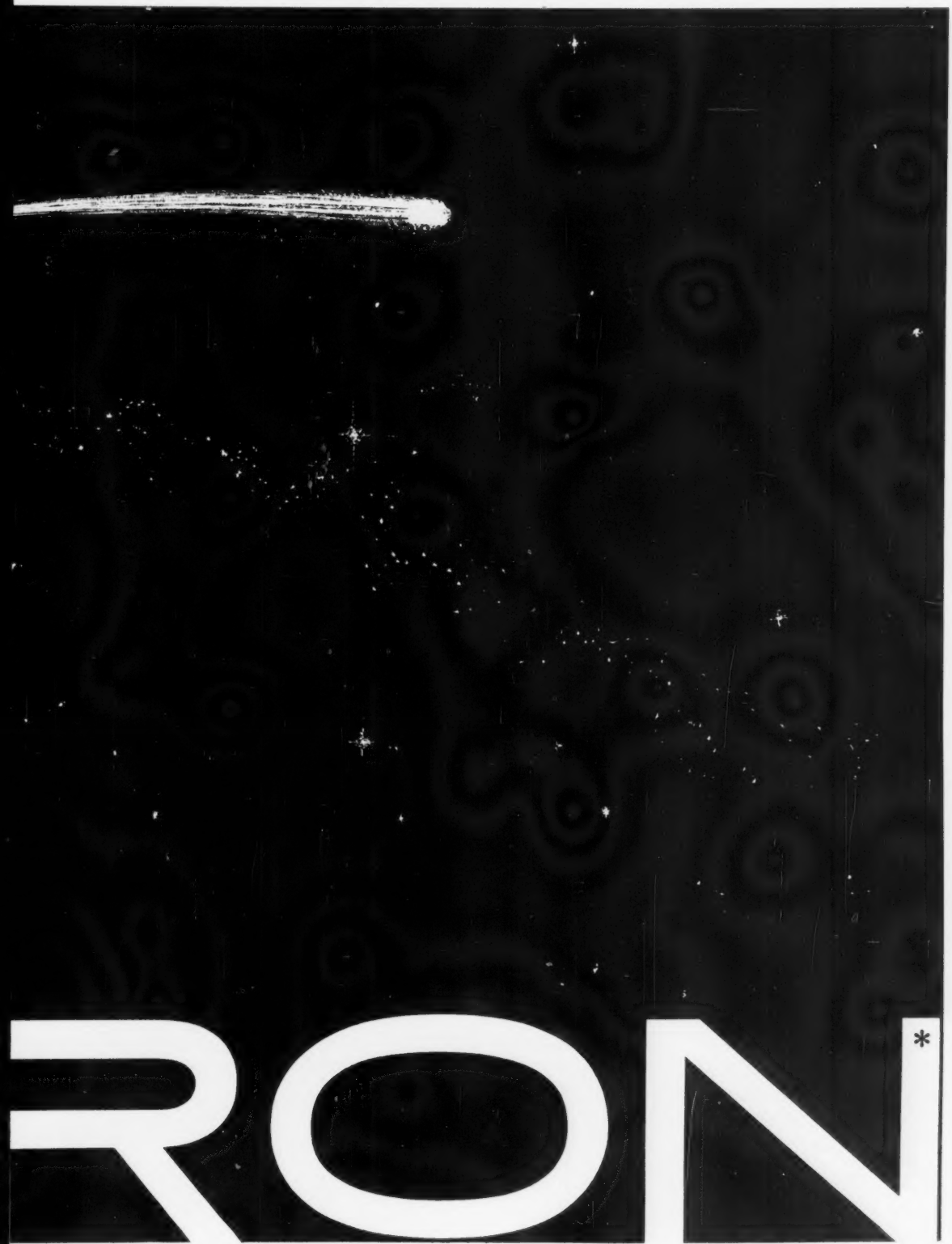


A bright new family of fabrics . . . Cotron

New lustre, beautiful hand . . . dyes like a dream and takes to wash-and-wear with practically no trouble at all...that's Cotron. This Fall, it's the name your customers will see in four color advertising in national magazines.

*Trademark of American Viscose Corporation for fabrics of cotton blended with AVISCO® rayon



RON*

nd out how you can take advantage of Cotron and this promotion, write

call our Staple Sales Division at LAckawanna 4-7200.

MERICAN VISCOSE CORPORATION • 350 Fifth Avenue, New York 1, New York

AVISCO®

ELIMINATE TOP WAXING OF NYLON WARPS... SIZE AND LUBRICATE IN ONE OPERATION...

LET NOPCOSIZE® N AND NOPCOLUBE® 55 WORK FOR YOU

Nopcosize N, a polyacrylic acid size, is internally plasticized to give a pliable yarn during the weaving of filament nylon. Nopcolube 55, an emulsifiable lubricant, is added to the size mix to eliminate afterwaxing at the delivery end of the slasher.

Developed by Nopco chemists, these two products give increased quality, greater economy, and cleaner goods. In fact, the combination of the two in the size pan is acknowledged to be today's most successful technique for sizing producer's twist nylon.

We would be happy to supply enough of both for you to make your own trial run. Just call or write our Textile Chemical Department.

NOPCO

VITAL INGREDIENTS FOR VITAL INDUSTRIES

NOPCO CHEMICAL COMPANY
Harrison, N.J.

PLANTS: Harrison, N.J. • Cedartown, Ga. • Richmond, Calif. • London, Canada

The pluses of NOPCOSIZE N plus NOPCOLUBE 55

- *Exceptionally flexible, well-lubricated warp*
- *Superior split at higher slashing speeds*
- *No need for top waxing*
- *An absolute minimum of seconds*

You can feel the extra value . . .

and to think it can be done by processing your material through the Turbo Electro-Finisher!

Up-grading a fabric is often a matter of finish — a rich, vibrant luster . . . better hand . . . increased quality.

Manufacturers are amazed at the remarkable new fabric effects achieved with the Turbo Electro-Finisher. The electrically heated cylinder is faced with special grooves which separate and straighten the fibers, then polish them to produce the luxury-luster that makes sales.

The temperature of the cylinder is electrically controlled, so that every inch of fabric width, every foot of fabric length is finished exactly alike. A pneumatically-controlled endless conveyor brings the cloth in contact with the cylinder at the desired speed and pressure.

If you want to see the results — on acrylic fibers, on woolen and worsted fabrics, including alpacas, mohair, cashmere, etc. — send us samples of your own fabric for processing on the Turbo demonstration unit. Be there yourself to see the "electrifying" results.

TURBO MACHINE COMPANY
LANSDALE, PA.

Southern Sales Representative: Parrott and Ballentine, Greenville, S. C.

TURBO ELECTRO-FINISHER — for new luster, new fabric effects.

TURBO SHEARER — for heavy-duty and final shearing.

TURBO WET APPLICATOR — for applying silicone and chemical finishes.

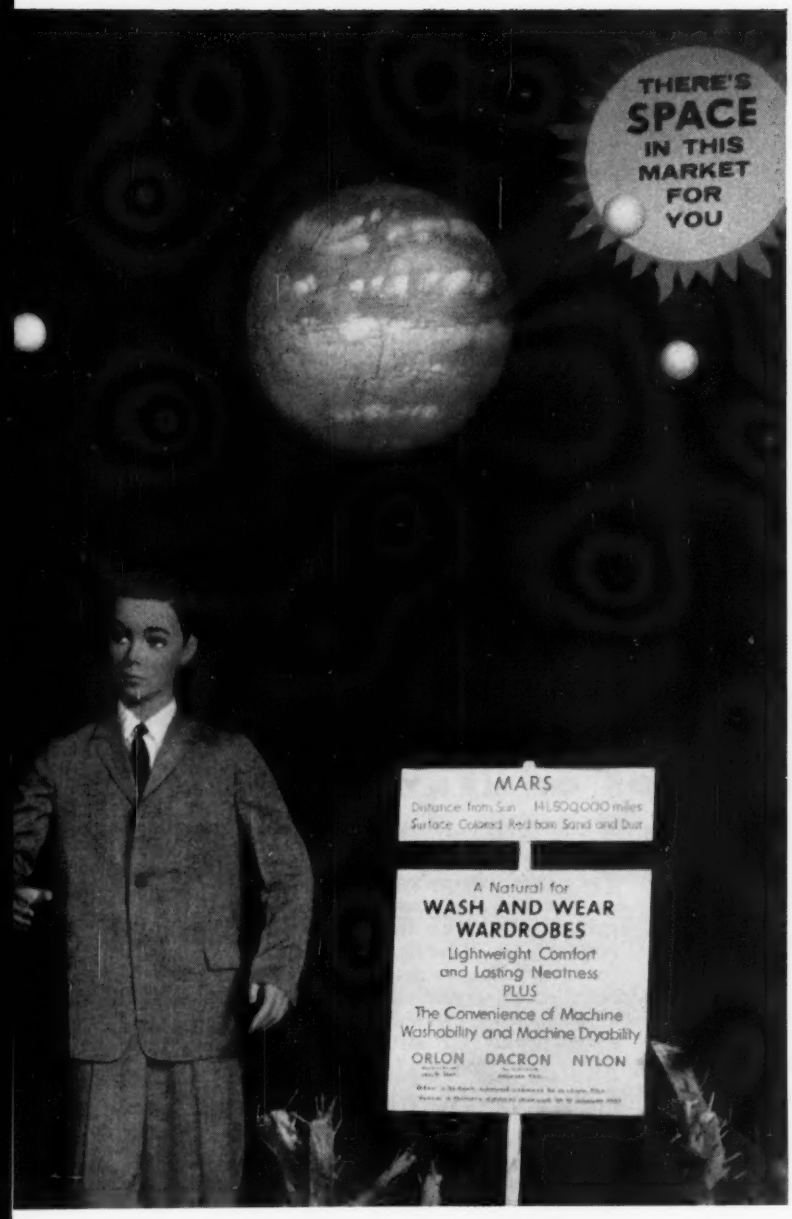
No. 6 in a series—**how your Du Pont salesman is backed by many sales-building activities including Fiber Research, Technical Service, Fabric Development and Merchandising.**

Du Pont sells ideas

This is Du Pont's exhibit at the recent NARCF Convention in Chicago. On the right is Willard Cole, President of Henry C. Lytton Co., one of Chicago's leading apparel stores. He is discussing Lytton's plans for wash and wear with two Du Pont merchandising men . . . Don Holmes (left), Merchandising Manager for men's wear, and Joe Davidson, Merchandising Specialist in men's furnishings.

Du Pont merchandising representatives are in constant touch with all levels of the textile industry. At trade activities such as the NARCF Convention they promote new ideas that stem from Du Pont's modern-living fibers. Ideas like regular and automatic wash and wear. Ideas that help build new and larger markets for fabrics made with Du Pont fibers.

FROM RAW FIBERS TO RETAIL SALES . . .



as well as fibers

When skilled merchandising men like Don Holmes and Joe Davidson return to Du Pont, they bring back market reactions. They report facts. Attitudes. Results. Predictions. All of which aids in making your Du Pont salesman the best informed in the industry . . . helps you and Du Pont anticipate new demands, plan broader markets.

Du Pont believes it can increase the market for its fibers and thus benefit its customers by providing useful assistance to all levels of the textile industry. It's through your Du Pont salesman that you, as a customer, have access to a range of technical and merchandising information unique in the textile industry . . . access to the latest in *ideas* as well as fibers and fiber technology.

Product and Process Notes from Du Pont

Du Pont's No. 7 Thick and Thin rayons, formerly produced only in deniers from 100 through 450, are now available in heavier deniers to permit broader application in home-furnishings end uses. These yarns, for example, in 900, 1800, and 2700 deniers, will impart completely new styling effects to drapery and upholstery fabrics.

Fiber stress-strain properties—a new 36-page Technical Information Bulletin (X-82) provides data on the stress-strain properties of eight fibers (acetate, "Dacron"* polyester fiber, "Orlon"** acrylic fiber, nylon, rayon, cotton, silk and wool), under a variety of hot-dry and hot-wet conditions. This research is from the third phase of a broad fiber characterization program sponsored by Du Pont at North Carolina State College. The bulletin also describes how a knowledge of fiber properties can be useful to the mill man and design engineer.

Du Pont announces commercial availability of six new nylon hosiery yarns in response to the industry's intensified efforts to bring new styling and greater variety to women's hosiery. The new yarn counts are as follows:

17 denier: 2 filament	**14 denier: 2 filament**
21 denier: 3 filament	**15 denier: 3 filament**
28 denier: 4 filament	**20 denier: 2 filament**

The addition of these yarns makes it possible for the hosiery manufacturer to increase his range and styling from the sheerest to full service weights.

Nylon on draw-wound tubes improves processing—The use of draw-wound tubes in place of bobbins will improve processing for reverse twist to obtain S and Z plied yarns. These tubes are now available in all deniers.

Technical information bulletins contain detailed, practical information on Du Pont product and process developments. They cover fiber properties, mill processing, dyeing, finishing and fabrication. Refer to your copies frequently; they can save you time and money. To be sure you have all the bulletins you need—check with your Du Pont salesman or technical-service representative.

*Du Pont's registered trademark for its polyester fiber.
**Du Pont's registered trademark for its acrylic fiber.

Enjoy the "Du Pont Show of the Month"—on CBS-TV

DU PONT
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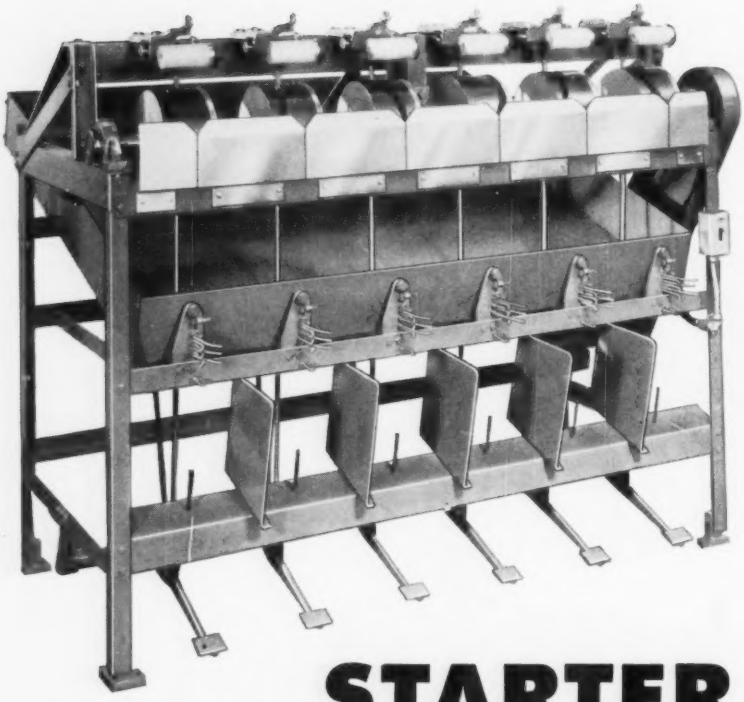
BETTER THINGS FOR BETTER LIVING
...THROUGH CHEMISTRY

DU PONT BUILDS PROFITS FOR YOU



BARBER COLMAN

STARTER MAKER

DESIGNED TO MEET THE NEEDS OF MANY MODERN MILLS

This machine is arranged to wind starter layers of yarn onto a core, from a *cheese* as the supply package. The use of a cheese rather than a bobbin *speeds up* the operation in that *many* "starters" can be made from one supply package; in contrast with the previous method where one bobbin supplied only one, or a limited number, of "starters." Tension fingers positioned above the package allow the proper amount of tension to be introduced.

TAIL FOR MAGAZINING

An additional advantage is that this machine can be used to make a tail of yarn on the "starter," to be used in magazining cheeses. This tail consists of several initial wraps of yarn which are separate and to one side of the main body of the "starter," and subsequently the full cheese. This allows for easy finding of the end, and permits magazining without difficulty. Furthermore, each package will then be stripped completely of yarn, doing away with the necessity of backwinding pieces.

WINDS WOOD CORES

The picture shows wood cores being wound on live spindles, these cores being the kind generally used on twisters, doublers, backwinders, and the like. Adaptors are available for the spindles so that bakelite or dye sleeves can also be wound as "starters" on this machine. The use of a Starter Maker is extremely advantageous for mills dyeing on cheeses, where fresh "starters" are needed every time.

EASILY CONTROLLED, VERSATILE

The operator simply picks up the end from the package, lays it into the tension device, gives it a few wraps around the core, then lets the core down onto the winding drum. When enough yarn is wound on to the core, stepping on the foot pedal lifts the "starter" from the drum and applies a brake. When the end is broken off, part remains held in the tension device, ready for first wraps on the next core. *For complete information, see your Barber-Colman representative, or write direct to the factory.*

AUTOMATIC SPOOLERS • SUPER-SPEED WARPERS • WARP TYING MACHINES • WARP DRAWING MACHINES

BARBER-COLMAN COMPANY

ROCKFORD • ILLINOIS • U. S. A.

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these finishes achieve the finest in wash and wear fabrics

RESIPON® N C

– a modified urea-formaldehyde resin produces a soft, resilient hand on cotton and rayon fabrics, while adding these important "wash and wear" characteristics:

1 – exceptional crease and wrinkle resistance

2 – positive shrinkage control (at lower concentrations than conventional urea-formaldehyde resins)

3 – minimum amount of ironing required

4 – desirable hand for dress fabrics

HYDRO-PRUF®

– when used in conjunction with Resipon N C, the combination of silicone and resin brings wash and wear fabrics to new heights of quality and efficiency. Addition of Hydro-Pruf further improves your fabrics in these ways:

– by enriching the "hand" still further

– by speeding up the drying process (less water absorption)

– by increasing resistance to soil (fabric stays fresher longer)

– by improving tear strength

Finishers find that the compatibility of Hydro-Pruf and Resipon N C simplifies the production of the finest in "wash and wear", resembling the hand and appearance of combed cotton fabrics.

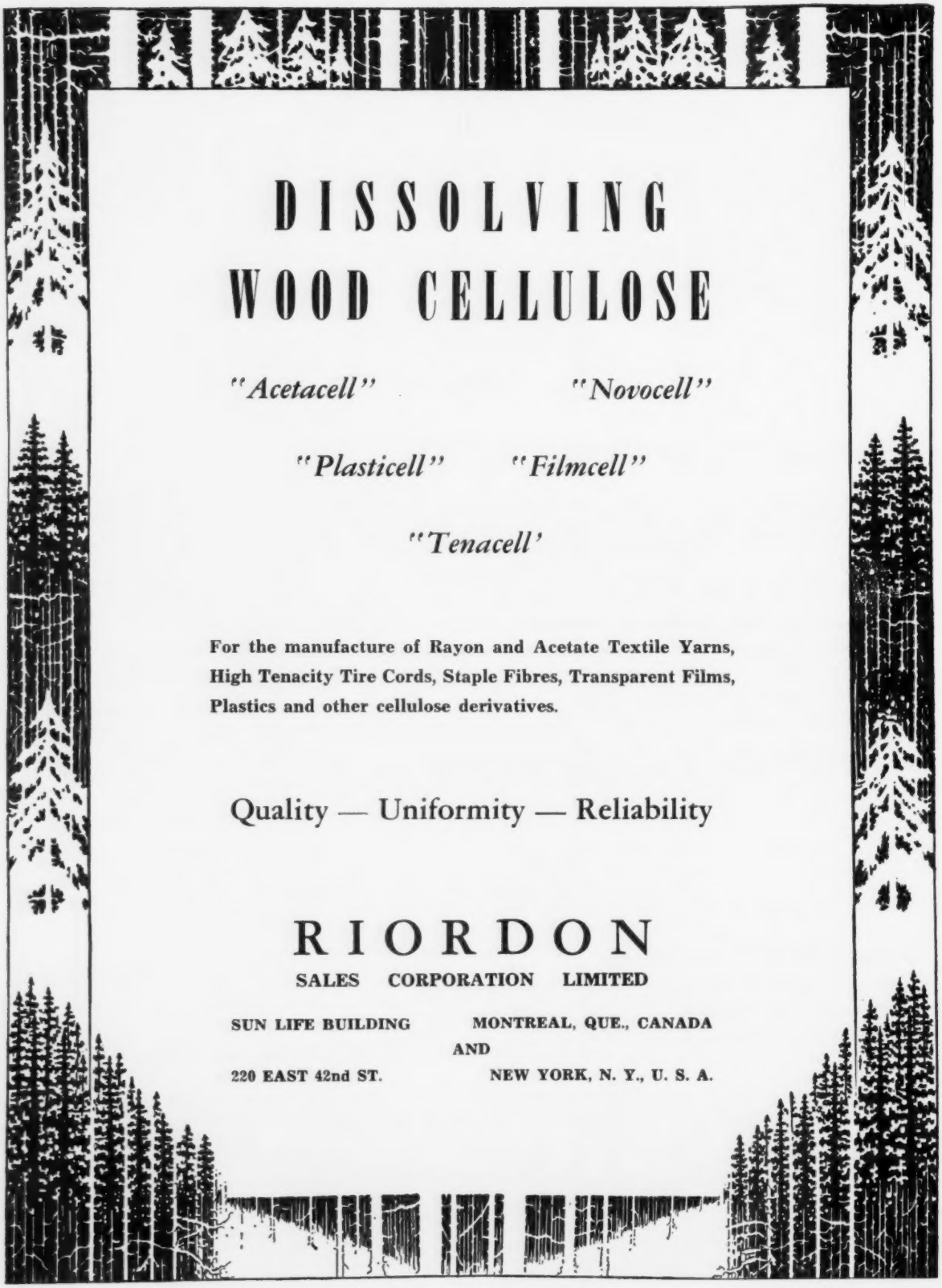
Ask your Arkansas representative for full details, or write for Technical Service Bulletin.

AC INC®

ARKANSAS CO., INC.

Serving the Textile Industry for over 50 Years

NEWARK, NEW JERSEY


DISSOLVING
WOOD CELLULOSE
"Acetacell"
"Novocell"
"Plasticell"
"Filmcell"
"Tenacell"
For the manufacture of Rayon and Acetate Textile Yarns, High Tenacity Tire Cords, Staple Fibres, Transparent Films, Plastics and other cellulose derivatives.
Quality — Uniformity — Reliability
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SALES CORPORATION LIMITED
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The Speed-Tex* RING
by SACO-LOWELL

A Revolutionary Development in Ring Design!
Offers the Shortest Breaking-in Period of Any Ring!

The Saco-Lowell Speed-Tex ring offers the shortest breaking-in period of any known ring. It retains all outstanding Pawtucket qualities — ultra-smooth finish, close tolerances, long life.

The shortest breaking-in period is caused by a new surface metallic alloy. The alloy *is not* intended to remain unchanged — the traveler gradually alters the finish. Invisible after a short time, traces of the alloy in the traveler path aid in providing longer traveler life.

The final finish of the Saco-Lowell Speed-Tex ring is obtained at low temperatures which do not soften the initial case hardness of the basic steel ring. A softer ring would break in satisfactorily, but would have a short life.

Actual mill tests show only 4 or 5 traveler changes are required for complete breaking in, compared to 50 to 100 traveler changes for conventional style rings. The Saco-Lowell Speed-Tex will give consistently, ring after ring, high traveler speeds, the longest life, and the shortest breaking-in period of any ring available today.

TYPICAL INSTALLATION

Yarn, Warp—20.5's
Ring Size—3" Diameter
Spindle Speed—9,000 RPM
Traveler Speed—7,069 FPM
Traveler—
Victor No. 2/0-X2D-191 HRW

Traveler changes during breaking-in period:
No. 1— 1 hour
No. 2— 20 hours
No. 3— 48 hours
No. 4— 96 hours
No. 5—120 hours
Traveler life—120 hours thereafter

SACO-LOWELL Speed-Tex MODEL 01C

Higher Traveler Speeds Than Ever Before!

This exclusive Saco-Lowell ring reaches a new high in large package spinning speeds. Special flange contours permit traveler speeds never before attained. The inner flange, bearing surface of the traveler, is full width to provide a wide, steady traveler path. The outer flange, not a true bearing surface, has been sharply reduced in width.

A wider traveler may be used without changing its total weight. A special wider traveler, developed by the Victor Ring Traveler Division of Saco-Lowell, is also elliptical with a small circle resulting in a low center of gravity. The combination of low center of gravity and increased width result in better traveler balance, more stable operation, and superior running conditions. More bearing area and uniform pressure reduces traveler wear.

The Model 01C Speed-Tex has all of the advantages of other Speed-Tex rings — the shortest and most economical breaking-in period of any ring available. In addition to break-in advantages, it retains the high surface finish and long life of previous Pawtucket rings.

COMPARATIVE MILL INSTALLATION DATA

Mill A — 25's Warp Yarn	Frame—SG-3D Gwaltney
Model 01C Speed-Tex	**Conventional Ring**
Ring Size—2½" Diameter Spindle Speed—11,500 RPM Front Roll Speed—154 RPM Traveler Speed—7,500 FPM Traveler—Victor No. 4/0-X3D-89-HRW	Ring Size—2½" Diameter Spindle Speed—10,200 RPM Front Roll Speed—136 RPM Traveler Speed—6,700 FPM
Mill B — 24.75's Warp Yarn	**Frame—SG-3D Gwaltney**
Model 01C Speed-Tex	**Conventional Ring**
Ring Size—2½" Diameter Spindle Speed—11,500 RPM Front Roll Speed—168 RPM Traveler Speed—7,500 FPM Traveler—Victor No. 3/0-X3D-89-HRW Break-in Schedule: No. 1—30 minutes No. 2—24 hours No. 3—48 hours No. 4—72 hours No. 5—96 hours Traveler Life—96 hours	Ring Size—2½" Diameter Spindle Speed—10,600 RPM Front Roll Speed—156 RPM Traveler Speed—6,950 FPM Traveler Life—48 hours

*Patent applied for

PAWTUCKET SPINNING RING DIVISION
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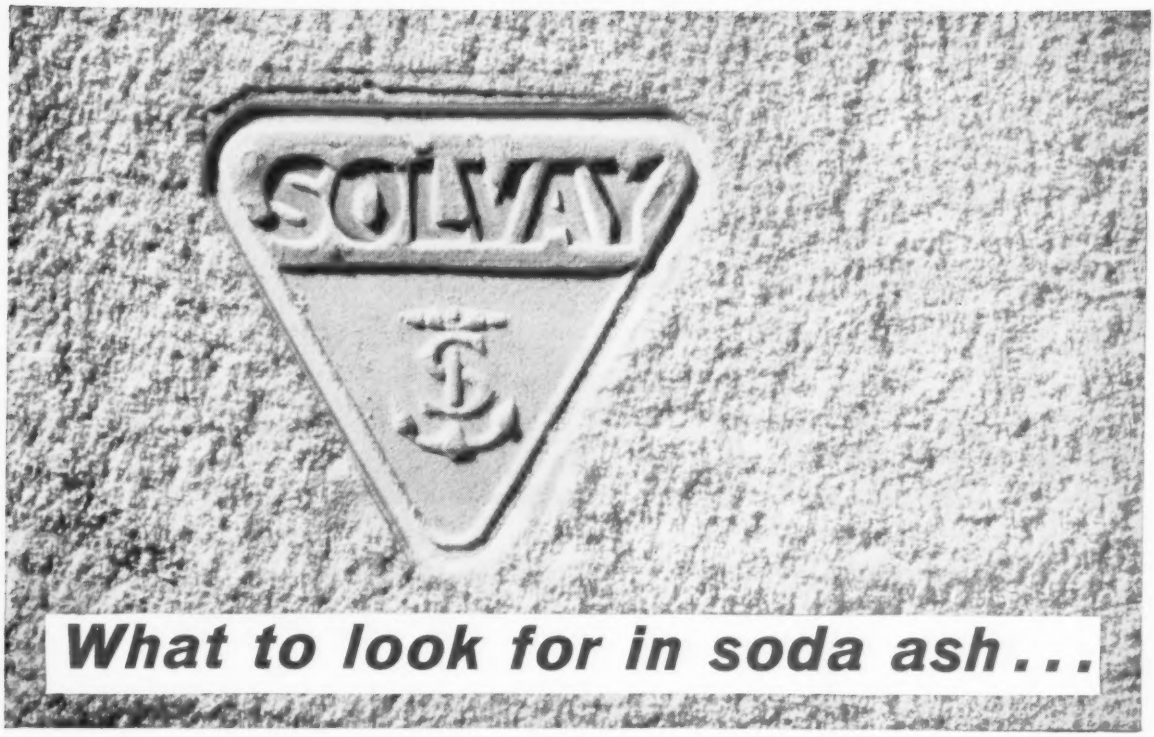
SACO-LOWELL SHOPS
60 BATTERYMARCH STREET, BOSTON 10, MASSACHUSETTS
Shops at BIDDEFORD and SACO, MAINE; SANFORD, N.C.; EASLEY, S. C.—Sales Offices: CHARLOTTE • GREENSBORO • GREENVILLE • ATLANTA



What to look for in soda ash . . .

Obviously, the first consideration of soda ash users is the product itself—its sodium oxide content, granulation and purity. But, what are the less obvious considerations that have caused so many experienced buyers to "specify" the SOLVAY brand for so many years?

TECHNICAL SERVICE. The Textile Section of SOLVAY's Technical Service Department assists in overcoming problems, in designing formulas or in the development of new processes. Its field staff are specialists with many years of textile experience . . . supported by a laboratory group working with advanced equipment.

ASSURANCE OF DELIVERIES. Three shipping points assure carload consumers of soda ash prompt delivery service. Local stocks at over 200 stock points are available for l.c.l. shipments.

FIELD SERVICE. SOLVAY field representatives, working from 13 widely-situated branch offices, are always available to provide extra services that the SOLVAY trademark represents to soda ash users in the Textile Industry.

Allied Chemical

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61 Broadway, New York 6, N. Y.

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Soda Ash • Caustic Soda • Calcium Chloride • Potassium Carbonate • Caustic Potash Chlorine • Sodium Bicarbonate • Chloroform • Ammonium Bicarbonate • Sodium Nitrite Cleaning Compounds • Ammonium Chloride • Aluminum Chloride • Snowflake® Crystals Methyl Chloride • Monochlorobenzene • Para-dichlorobenzene • Ortho-dichlorobenzene Vinyl Chloride • Hydrogen Peroxide • Methylene Chloride • Carbon Tetrachloride Mutual Chromium Chemicals

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FABULIZED

eyedropper test sells customers on sight

You don't tell customers Fabulized makes nylon and other synthetics as absorbent as natural fibers — you show them!

All you need is an ordinary eyedropper and fabric samples. Flick a few drops of water on the Fabulized fabric and presto, they're absorbed instantly (in 15 seconds, average). Water-drops on the non-Fabulized fabric are still there minutes later.

At the trade or consumer level this simple test demonstrates the superiority of your Fabulized fabrics over ordinary synthetics. Here is dramatic proof that Fabulized synthetics are absorbent, silky, comfortable to wear.

Fabulized is applicable to more than 60 different types of apparel and domestics, including:

hosiery	sweaters	rainwear (linings)	snowsuits (linings)
underwear	sportswear	dresses	sheets
lingerie	uniforms	skirts	blankets
sleepwear	gloves	trousers	bedspreads
shirts	corsets & bras		tablecloths
blouses	coats, suits		

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Parfé may be used alone, in combination with other yarns, or with any of Bemberg's textured novelty yarns for fabric developments that open up vast new style vistas in the dress and sportswear fields (both woven and knitted), and in upholstery, drapery, and automotive fabrics.

Make a date to see the wonderful new showcase textures Bemberg has prepared for you . . . showing Parfé alone, combined with other yarns, overdyed, and overprinted.

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Glass rods dipped into beakers show comparative draining ability and non-congealing qualities of Ten-O-Film, right, and conventional starch, left.

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Corn Products also makes these famous starches for the Textile Industry:

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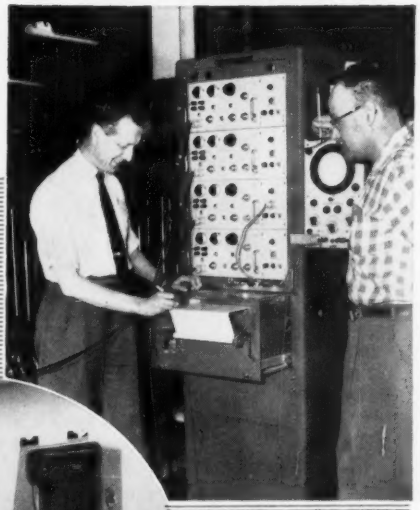
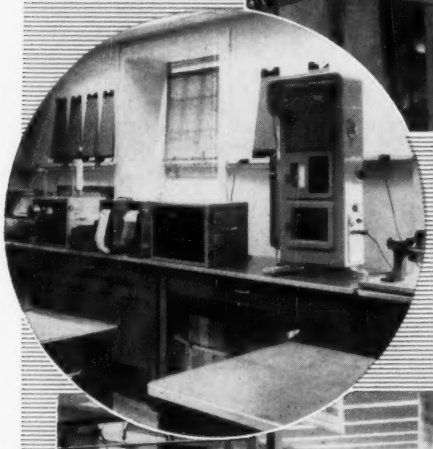
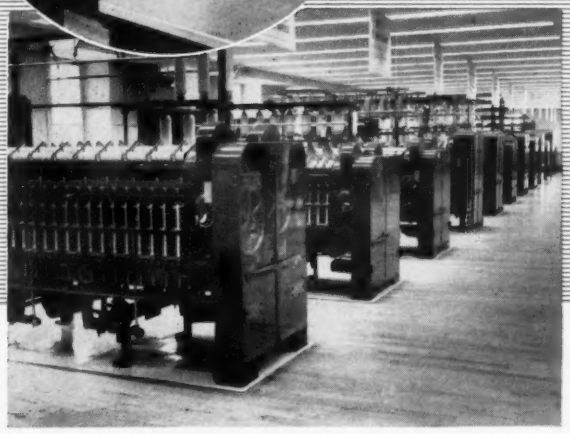
WHITIN RESEARCH...





Views inside Whitin Research Division showing portions of our testing, laboratory and processing facilities.



Birthplace of the Mill of Tomorrow

75 Whitin engineers and technicians, especially skilled in research work, are constantly at work seeking new data, testing new methods and developing new machines. The objective of this group, the permanent staff of the Whitin Research Division, is the development of machinery or methods which will enable you to process your product faster, better, or at lower costs — and with increased profits.

The time and talents of these people are devoted solely to:

1. Pure research on fibers and fiber processing.
2. Applying new textile knowledge to machinery design.
3. Improving productivity, function and efficiency of present Whitin machinery.

67 different models of our mill machinery in operation provide unexcelled opportunities for rapid analysis, evaluation, and solution of a wide variety of technical textile problems from opening through winding. These same facilities are available and frequently used for testing mill stock and assisting customers in determining and securing the best processing conditions.

Today, Whitin research, carried on with vigor, skill and imagination, will indeed give shape to the mill of tomorrow!

Buy "competition insurance" -BUY WHITIN!

We cordially invite you to visit the Whitin Research Division—to see for yourself what Whitin is doing to promote more profitable mill operation.

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MEMO TO ADVERTISERS

Something new in September!

Right now in textiles the big need is new markets and new ideas that bring sales. Everywhere in our industry, the key men are saying: "We know how to make the stuff—the hard job is to sell it."

EMPHASIS on MARKETING

MODERN TEXTILES MAGAZINE wants to make this hard job easier. And this year in our annual September review of new developments in man-made fibers, we shall *put the emphasis on marketing.*

Our 1958 Review will be aimed directly at the people who buy man-made fibers and make them into fabrics. We are going to fill in yarn spinners, weavers, knitters, dyers, finishers and converters about the most recent and promising new uses of man-made fibers in every kind of fabric for every kind of function.

Our aim will be to alert them on how they can find those wanted new markets for their products. We're going to clue them in also on how they can bring out new products using man-made fibers.

Unlike our past fiber reviews, this September's treatment will no longer divide the fibers into separate compartments. Just as the textile industry is doing these days, we're going to jump over the fiber fences and let end use and function be our guiding rules.

We're going to give all the new trends, the emergent and potentially profitable developments affecting man-made fibers. But they'll be treated in a new way—a lively and informative way. There will be new and brighter art work, new formats and, overall, a new sparkle to our treatment.

MAXIMUM EXPOSURE

Last, but not least, our September issue will contain our revised and updated "Tables of Denier Numbers and Filament Counts of Man-Made Fibers and Yarns." There is hardly a mill, or textile designing, or sales office in the country that does not make daily use of these tables. As they were last year, the tables will be printed on a special pull-out section enlarged for easy consultation.

If you make yarns or fibers—if you make machinery and equipment—if you make dyestuffs or finishing chemicals—if you have any products or services to sell the textile industry—you'll find it profitable to advertise in our September issue.

Our new and sharpened version of our annual fiber review will guarantee your advertisement *maximum exposure* to the men who make the buying decisions in every part of the textile industry. Advertising forms close August 1, 1958.

Reserve your advertising space now for our September issue by contacting

MODERN TEXTILES MAGAZINE, 303 Fifth Avenue, New York 16, N. Y., MUrray Hill 4-0455.

The Cocker Multiple Beam Tricot Warper

Head Diameters up to 32″

Versatile

2 – 21 inch beams
1 – 42 inch beam
1 – 55 inch beam
1 – 50 inch Raschel beam

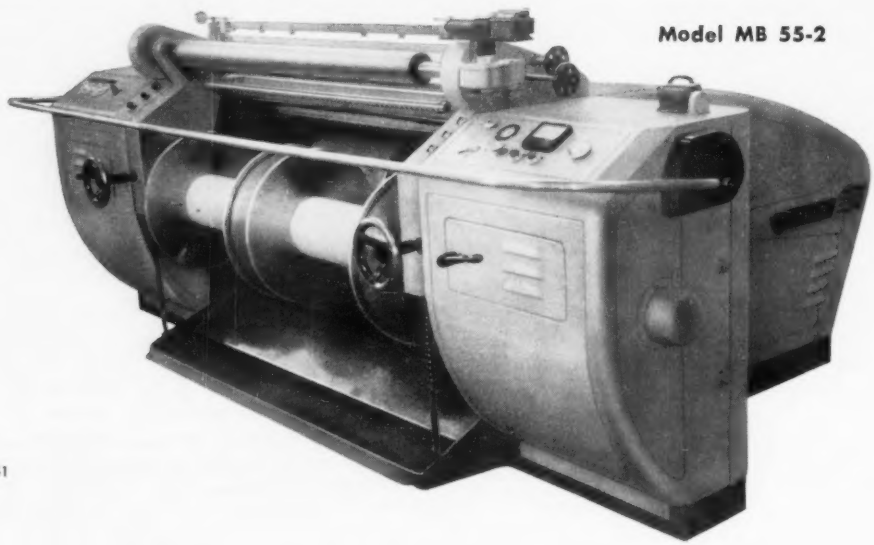
Fast

Normal sustained operating speeds up to 600 YPM.

Convenient

Individual controls are within full view and easy reach of operator. Simple changeover from one set-up to another. Has all of the most modern features and safety devices.

Model MB 55-2



Let us give you full information on this revolutionary Tricot Warper.

In Canada and New England
Contact W. S. Clark
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WORLD'S LARGEST DESIGNERS AND BUILDERS OF COMPLETE WARP PREPARATORY EQUIPMENT

When your synthetic fibre yarns are

Franklin-Dyed

here's how you benefit

Franklin Dyed Yarns offer an opportunity to reduce manufacturing costs and to increase the salability of your products. For instance, take —

FLUF dyed TRADE MARK HI-BULK Orlon* Yarns

This new, exclusive process overcomes the objections to previous methods of yarn dyeing this fibre. Because the yarn is fully bulked when dyed, the following advantages are realized in the knitting industry:

KNIT TO SIZE — Garments can be knitted to size, thus eliminating size variations which take place when dyeing occurs after knitting.

MINIMIZED FINISHING — The necessity of additional tumbling after knitting is eliminated and only steaming is required in order to achieve a soft hand.

PATTERNS AND STRIPES — The field is open for multi-colored style creations without the necessity of long deliveries from spinner to knitter.

Have your yarns Franklin Dyed and identify them as such. It pays.

OTHER FIBRES

In addition to Hi-Bulk Orlon, cotton, wool and worsted yarns, we also dye the following synthetic fibres: — Orlon tow, Acrilan, Dacron,** Ban-Lon,® Helanca, spun nylon, spun rayon and blends. All except Orlon tow are dyed on Franklin spring packages — the "secret" of uniform penetration and uniform shades.

*Trademark for Dupont's acrylic fibre
**Trademark for Dupont's polyester fibre

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YARN MERCHANTS & LARGEST PACKAGE DYERS IN THE WORLD
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MODERN TEXTILES
Magazine

Publisher's Viewpoint

Wash-and-Wear: time to attack its weaknesses

The phrase "wash-and-wear" is on everybody's lips today in textile manufacturing and apparel retailing. The merchandising power of these words has reached a point where there are virtually no merely washable garments offered to consumers. All the shirts, dresses, slacks, children's wear and so on that were once bought by consumers with the understanding that such apparel would be washable at home and then ironed into a wrinkle-free state by mother toiling over her hot ironing board, are now likely to carry tags that say, in one way or another, that they are "wash-and-wear."

In the case of so much of this apparel, particularly cotton and rayon or blends of both fibers, wash-and-wear qualities are obtained by resins. The widespread use of such resins has given rise to a number of problems, and these problems threaten to cast a dark shadow over the whole future of wash-and-wear.

Some of the more serious of these weaknesses were pointed out last month by P. J. Fynn, director of J. C. Penney Company research and testing laboratory. Speaking before a meeting of the American Association for Textile Technology, Inc., in New York, Mr. Fynn pointed out that there is more to wash-and-wear than taking standard washable fabrics and putting a resin finish on them.

"Everyone," Mr. Fynn noted, "wants the old basic fabrics finished for wash-and-wear. To get it the buyer may be prepared for the increased cost of finishing on the basis of an enhanced saleability. But suddenly it develops that the goods he'd bought for years and is now getting with a new expensive finish is no good! The lab tells him that it is tender, it pulls apart at the seams, it weakens visibly under a hot iron, it turns yellow or brown in laundering, it tears too easily."

Heavier Constructions Urged

Mr. Fynn then added that the textile industry has to face up to the fact, that unless there is a major breakthrough in resin technology, it will be necessary to use a heavier gray goods construction in all categories to overcome the inevitable drastic loss of tensile strength, of abrasion resistance and of tear strength caused by even the best resin finishes.

Another serious current problem of wash-and-wear on which Mr. Fynn uttered sensible words is the matter of tricky and loosely worded advertising claims. Many wash-and-wear fabrics, both resin-treated cellulosics and fabrics containing the newer man-made fibers, he said, have "good honest, easy care features" recognized and wanted by consumers. But excessive wash-and-wear claims based on tricky and confusing laundering instructions, he said, can damage the prestige of wash-and-wear, and cause consumers to be disillusioned to the ultimate harm of the great merchandising potential remaining in wash-and-wear garments.

Total Approach Necessary

Another stumbling block in the road to complete consumer confidence in wash-and-wear, as pointed out by Mr. Fynn, is the question of garment fabrication to make interlinings, tapes and other findings just at washable and wearable as the main fabric. "Many of the cut, make and trim problems are still in the by-guess-and-by-jiminy stage of development" he said, noting that even quality-minded manufacturers do not have these aspects of garment fabrication reduced to a science.

The textile and garment fabricating industries will do well to heed the advice of Mr. Fynn, presenting, as he does, the accumulated experience with the problems of wash-and-wear of one of the country's largest retailers of apparel. Incidentally, the full text of his talk along with several other vital discussions of the current status of wash-and-wear merchandising will be presented in our next month's issue as part of our usual presentation of the "Papers of the American Association for Textile Technology."

A. H. McCullough

OUTLOOK IN TEXTILE MARKETING

Better days for textiles in the offing?

By Robert C. Shook*

THERE ARE sound reasons for believing that the postwar economy is passing through a transitional period, and that the next decade will see a more favorable situation for textiles and apparel than has existed in the postwar period to date. For a number of reasons, however, current wholesale activity in textile and apparel items has remained in a consistently depressed state, although retail sales have been well maintained.

The Long and Short of It

It is very important, therefore, for textile management to distinguish clearly between short-term and longer term influences. Some of these important differences between shorter and longer term influences are illustrated by the current paradox in textile apparel operations. On the one hand, textile-apparel sales have been well maintained at the retail level. On the other hand, however, this sustained level of demand at the retail level has not been reflected either in wholesale textile-apparel activity, or in the textile price structure.

A Paradox in Soft Goods

Why should retail business be so good and other aspects of textile activity so bad?

The simple fact seems to be that retailers, cutters and others are much more frightened now than they were in earlier periods that a major depression is in the process of developing. Consequently, there is a persistence and extremity of inventory liquidation, which is totally unjustified on the basis of retail apparel business.

In any case, despite the favorable level of retail apparel sales, conservatism in buying, attempts to increase inventory turnover, and efforts to force successive sources of supply to carry an inordinate amount of inventory to meet current new orders, have all been pushed to new extremes not previously witnessed in the post-war period.

Developments of this sort, while discouraging, are obviously self-correcting.

Passing the Inventory Buck

A favorable factor is that the successive sources of supply are also operating conservatively. The cutter of most apparel items not only is not producing finished garments for stock, but has also reduced his fabric inventories. The converter is finishing and buying on a very conservative basis. Many types of fabric production have been curtailed at the mill level.

In fact, the only inventories that can be identified from current statistics as having remained somewhat excessive last year and into this year are cotton grey goods in mill hands, and even these would be adjusted very quickly by further production curtailment or by resumption of more normal buying policies by cutters and retailers.

Improvement is Likely

The textile situation, in short, is statistically favorable. But when will this favorable statistical position begin to translate itself into a more favorable trend of new orders and a greater degree of strength in the price structure?

There are indications now that this trend is beginning to develop slowly and gradually. This up turn, we are convinced, will become stronger and more generally evident during the late summer or early fall season. By that time not only will the lows in business activity have been established, regardless of what indexes of measurement are used, but it will be generally recognized by businessmen that they have been established. With a major deficit again in prospect for fiscal 1959, some revival of inflationary psychology seems likely. Furthermore, by that time retailers will have lost some sales through their extreme conservatism, and with other fears relieved they should be operating again on a more normal basis.

With regard to short-term influences, therefore, it is reasonable to assume that the textile economy has seen the worst of current unfavorable factors, and that we are not many months away from the time when conditions will become visibly more favorable in terms of a strengthening price-structure and an improved level of wholesale demand.

There are many markets where a considerable amount of stability has already been achieved, and where some improvement has already begun to develop or should begin to develop shortly.

Conservatively estimated however, it will probably still be a few months before improvement in the textile-apparel economy becomes general, and generally evident.

* Vice president & research director, A. W. Zelomek Associates, Inc.

Something New —

HEAT-SHAPED DYNEL FABRICS

Many uses seen for molded, embossed and stiffened forms obtained by utilizing this fiber's thermal pliability

By A. L. Snyder
UNION CARBIDE CHEMICALS CO.

IMPORTANT new design and engineering improvements in the production of radios, furniture, clothing and many industrial parts are now possible through use of special heat-shaped fabrics of Dynel acrylic fiber. The fiber is produced by Union Carbide Chemicals Co.

The development is said to make economically possible many new uses for textile fabrics. It utilizes the thermal pliability of Dynel to achieve molded, embossed or stiffened shapes by a simple heating, shaping, and cooling process. The same processes used for molding plastic sheets are readily adaptable to shaping Dynel fabrics.

Among typical items that can be made with shaped Dynel fabrics are covers for arm rests for furniture; protective packaging for delicate instruments; fabric covers for radios; for outdoor furniture; industrial flange and valve covers; ribbed battery separators; stiffened interlinings for outerwear; and many decorative uses where printed, shaped fabrics may be used.

The shaping process in its simplest form is done by forcing a cold mold into a piece of 100% Dynel fabric that is clamped on the outer periphery and heated at 320°F. The fabric is held in shape while being permitted to cool. The clamped area can then be trimmed to size. The shaped fabric will retain its form until reheated to nearly the temperature of shaping.

Another process is the heat-forming of Dynel fabric in a solution heated to about 225°F. A solution of 60% ethylene glycol in water boils at this temperature and has been used successfully for production of limited runs of shaped parts.

Vacuum molding, with short-time, high temperature infra-red heating of the fabric, is also being used successfully. A film of "Bakelite" C-11 resin, a vinyl film, rubber sheeting, or cellulose acetate film is used with the fabric to make it impermeable during the vacuum-molding process.

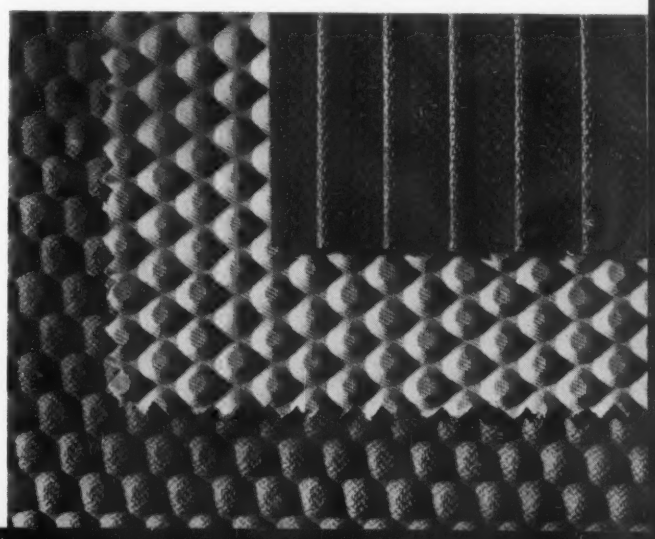
Woven and knitted fabrics of Dynel or Dynel blends with other fibers may be shaped by the hot air process with molds of wood, glass, metal, plaster of paris or papier-mache. The extent of shapability, or distortion in the molding operation, depends upon the number and size of yarns in the fabric. The twist of the yarns and the fabric weave are also factors.

Many woven fabrics have been drawn to stretch and set the warp or filling yarns to 160% of their original length in a single operation. Woven fabrics of fiber blends, such as Dynel with 25% cotton, have been drawn to an extension of 120% of original length. Non-woven Dynel felts and mattings can be embossed or curved and stiffened to form products like cap visor linings, although deep-drawing is not generally recommended.

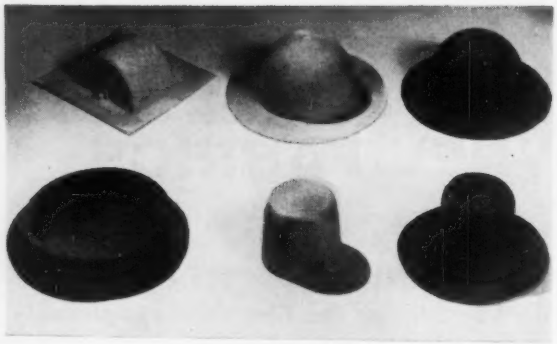
Best results are obtained with woven Dynel fabrics that have been piece dyed or boiled-off, rather than greige goods, to remove strains that might cause shrinkage due to uneven tensions in weaving and strains imposed during yarn manufacture. Similarly, knit goods can be heat shaped with greater success if finished beforehand.

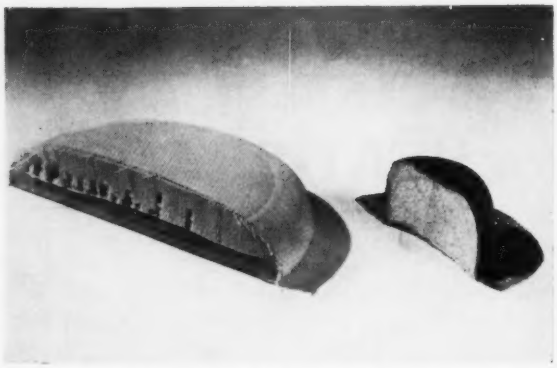
The stiffness of a shaped Dynel fabric is dependent on the temperature, time of heating, and tension during the heating operation. The greater any of these factors, the stiffer the cooled fabric will be. Use of lower temperatures and low tension will produce molded Dynel fabrics as soft as before shaping. Semi-rigid structures can be made, however; for even greater rigidity, the shaped fabrics can be treated with resins.

Successful development of the process for shaping fabrics stems from work in Union Carbide's laboratories dating back almost ten years, when experimental doll hats were first made from an early acrylic fiber. In 1956, men's light-weight, rain resistant summer hats, hot-drawn from flat-woven Dynel fabrics, were introduced to the retail market.



THREE EXAMPLES—These dimpled embossings (below) and ribbon-stiffened cloth (above) show how permanent designs are created by simple molding processes using Dynel.





SHAPED FOR INDUSTRIAL USE—(Left) Using standard plastic molding equipment, these are some of the shapes for industrial purposes that may be obtained with Dynel. (Right) Other molded Dynel forms are a cut-away stool seat cover embossed and pre-molded to size to simplify production; a cut-away foam filled cup for special padding or packaging needs.

Other variations of shaped Dynel fabrics that have been developed include: deep pile fabrics embossed to give the effect of a curled hair surface for women's coats; flat fabrics dimpled or ribbed to provide air spaces for heat insulation in special clothing; heat stiffened fabrics for light load-bearing structures; and other fabrics stiffened for cap visor linings and similar products.

Dynel's thermal pliability has also been utilized for the printing of fabrics without ink. Heated letterpress plates can be used to reproduce type, and even 60 screen halftone engravings reproduce clearly to mark goods for permanent identification, as well as unique fabric novelties. A similar technique can be employed for decorative roll leaf stamping, using an electrically heated die holder, dies or type and roll leaf metallic or pigment foil.

Heat-shaped Dynel fabrics retain their form until reheated. A formed Dynel lamp shade was used for over 600 hours with a 150 watt bulb on continuously. No stiffening or change of size or shape was observed.

For further information about this process readers are invited to write the editors.

L. A. Seeks Textile Mills

Operation of primary textile mills in Los Angeles is not only feasible but inevitable and the mill first out there will gain a big advantage, heads of leading eastern mills, were told by Mayor Norris Poulson of Los Angeles. Mayor Poulson cited findings by Fessenden Blanchard and Morrrell, management firm of New York, to support his statement, made at a meeting in New York recently.

Poulson said that the 11 western states in 1956 consumed an estimated 183,000,000 pounds of cotton for household textile mill products and another 113,000,000 pounds for industrial use. He added that, as for synthetic fabrics "there is plenty of raw material available in the west. In the past few years. . .the Los Angeles area has made tremendous strides in the chemical industry."

Macy's Thanks Celanese

As part of its 100th anniversary celebration, Macy's main department store and branches have been promoting since April 13 a "Thank You America" to step up sales volume in spring and summer goods. Celanese Corp. of America is the sole representative of the man-made fiber story in the modern American scene being promoted by Macy's

Celanese has supplied 1,800 cones of yarn to be used in building a band stand and background displays, and a yarn beam weighing about 475 pounds for use in one of the main window exhibits.

Over 89 windows, about 200 interior displays, 2,000 posters and signs, in addition to some 40,000 daily distributed hand bills and specially designed tags for merchandise on all floors, carried the "Thank You America for Celanese" message. Celanese representatives are cooperating in sales training programs, and a series of fashion shows.

Dynel Centrifuge Bags

Increased operating efficiencies and reduced labor and material costs in the production of organic chemicals through use of Dynel centrifuge bags have been reported by National Polychemicals, Inc. The bags are used in centrifugal extractors to hold chemicals during a moisture removal or spin-drying process. Union Carbide's acrylic fiber, of which the bags are woven, is said to greatly increase their useful life. *For further information write the editors.*

New Twist Set Nylon

A new twist set nylon, said to give 20% more coverage than competitive yarns, has been developed by the textile division of the United States Rubber Co. for the tufted floor covering trade. The yarn differs from conventional twist set nylons because the texture as well as the twist is permanently locked in the setting process. *For further information write the editors.*

The solid achievements of GOLDSTEIN & LEAVY

By Jerome Campbell
EDITOR, MODERN TEXTILES MAGAZINE

THROUGHOUT the vast, varied and complicated fashion industry whose main street and crucial marketing area is New York's "Seventh Avenue," few converting firms are as widely respected as Goldstein and Leavy. The respect is shared by garment manufacturers who are Goldstein and Leavy's customers; by millmen who look to the firm to move their gray goods; by dyers who depend upon the marketing acumen of Sidney Goldstein and Nat Leavy to keep their plants supplied with work. And nowhere is the respect for Goldstein and Leavy stronger than among their competitors, the small group of leading converters whose annual sales, like those of Goldstein and Leavy, are big enough to make them immensely important factors in the textile industry.

The elements that go into the reputation of Goldstein and Leavy are numerous and complex; but they can be summed up quite simply in this way: formidable skill in their business of converting fabrics for the fashion trade plus unalloyed, solid 14 carat integrity. The skill in selecting fabrics for the madly volatile and constantly whirling garment industry is the product, in both Sidney Goldstein and Nat Leavy, of long lifetimes of experience combined with natural ability as stylists and traders of an impressively high order.

Their reputation for integrity flows from the basic character structure of both men: imbedded in both is a kind of Old Testament moral strictness which made them determine, when they became partners 25 years ago, to follow a policy of selling only the highest quality goods in their price range and dealing with customers and resources in terms of undeviating fairness. "Nat Leavy and Sid Goldstein," a mill head who knows them well says, "lean over backward to be honest."

In his own plainspoken way, Nat Leavy sums up his company's business policy by saying "we believe in selling high quality goods; we believe in giving our customers the kind of service that will keep them active on our books 12 months a year; and we believe in honest dealing; we have never been and never will be a party to chiseling of any kind; we'd rather get out of business."

Sidney Goldstein and Nat Leavy first got to know each other when they were young men working as salesmen for the old silk converting house of Forma & Perry at 315 Fourth Avenue in New York City. Goldstein started there as a stock boy at $14 a month and then went on to become a crack salesman. Leavy came to the firm in 1918 after a few months' experience at Scherr Brothers, a shirtwaist house where he assisted the silk buyer at $7 a week. His work at Scherr led him to feel that he liked the textile business. He quit his job at Scherr's and set out to find another with more room for growth.

Walking up Fourth Avenue, then the center of the silk trade, he dropped in cold at Forma & Perry and asked for a job. After a few inquiries about his brief earlier experience in textiles, Bertrand Perry hired the 18-year-old as a salesman. It was as simple as that. Leavy took a case with samples of the firm's line of silks and set out to get orders.

And he got them with remarkable immediate success. "It was not so much a question of using one's feet," he recalls now, "as of using one's head. I studied carefully the fabrics in our line, and I studied the cutting-up trade. I made it my business to learn as much as possible about the various kinds of garment cutters and the fabrics they bought. Then I fitted the fabrics in our line to the wants of the different types of dress and lingerie and blouse manufacturers. The net result was a steady stream of orders. I worked on the principle that there is a customer for every yard of goods woven."

Sidney Goldstein says almost the same things about his early experience as a salesman. He, too, operated on the principle of using his head as well as his feet to find customers for Forma & Perry's silks. In 1923,

Bertrand Perry became ill, and the firm needed someone to stay in the office and direct the affairs of the business. Nat Leavy was selected for the job while Sidney Goldstein, as the firm's star salesman with the biggest accounts, continued his job of bringing in the lion's share of the new orders.

As manager of the firm's purchasing and converting operations, Leavy worked closely with the mills that supplied Forma & Perry with fabrics. He spent a lot of time at mills in the Pennsylvania and Paterson area and also in the plants that dyed and finished the goods for the firm. During these days in mills and dyehouses he made it his business to learn a great deal about fabric manufacturing and finishing—knowledge which complemented his already acquired knowledge of the fabric market, and caused him in time to become formidably equipped as an all-around converting executive.

They Form Their Own Firm

Along about 1926, Dave Forma withdrew from the firm selling his stock to Nat Leavy and Sidney Goldstein so that they became partners in the house to which for years they had been making so important a contribution. In 1933, the two men decided the time was ripe for them to cut loose from the old firm and form their own company. And so Goldstein and Leavy was established with offices at 1410 Broadway. Despite the depression and the fact that times were tough that year, the new converting firm's beginning was an auspicious one—not so much because of any big dollar capital, but because of the experience, converting skills and selling abilities of the two partners. It was, as events have proved, an unbeatable combination. From the very beginning, Goldstein and Leavy did well and grew steadily.

This year, the 25th anniversary of Goldstein & Leavy, finds the firm standing well up among the few top converters in the United States. The house is recognized in the trade as a leader in marketing an enormous range of style goods with special emphasis on popular priced fabrics for the dress and sportswear markets. In recent years also Goldstein & Leavy have entered the menswear market with a selected group of fabrics for slacks, shirts and sports jackets.

From silks, Goldstein & Leavy long ago passed into the converting of man-made fiber fabrics—first rayons and acetates and now a broadly diversified line of combination and blended fabrics utilizing virtually all man-made and natural fibers. Spun yarn goods are an important element of their business.

Still located at 1410 Broadway, the firm expanded its space to occupy almost two full floors. One entire floor is used as a warehouse for stocking finished goods for fast delivery to cutters. To walk through this big storage area and see the really overwhelming yardages of fabrics piled high in storage bins ready for immediate delivery is to realize in a peculiarly forceful way the substantial nature, the richness and variety of Goldstein & Leavy's activities in the converting trade.

The solidly established nature of the firm is evidenced in other ways in addition to the volume of its business, the range of its fabrics and its reputation for honest dealing. Nat Leavy has been one of the pillars of the Textile Distributors Institute, the trade association of the country's converters. He was active in the founding of the association in 1938, and has served on its executive committee and as a vice president for years.

But his deep sense of the value and need for community work go beyond the affairs of the textile industry. He is a man who has given generously of money and his organizing abilities on behalf of charitable causes in New York, his native city. For years he has been one of the most devoted workers on behalf of the Federation of Jewish Philanthropies in the textile industry. Among the Federation's activities dearest to him and one that takes up much of his time is Lebanon Hospital in the Bronx. He is a trustee of this 274 bed general hospital which serves all classes and creeds. He is also active in many other charitable organizations.

Unworried About Future

Whatever the ups and downs of the textile business generally, few firms seem so solidly based on the firm foundation of skill and decades of accumulated experience as Goldstein & Leavy. The two men who run it are unconcerned about the effect of the current recession or whatever uncertainties the future may bring to the country's overall economy. They know their business; and they know from long experience that it is a tough, rough business, but one they have mastered. They are confident that their demonstrated mastery of fabric styling and merchandising will be rewarding for them, both in money and deep personal satisfaction, as long as they want to continue at it.

Meanwhile, although the successful operation of Goldstein & Leavy takes up most of their time, life is not all work for them. Both like to play at playing golf, a game they enjoy greatly. Neither, however, will permit their scores to be published—"in keeping," Nat Leavy says, "with President Eisenhower's policy."

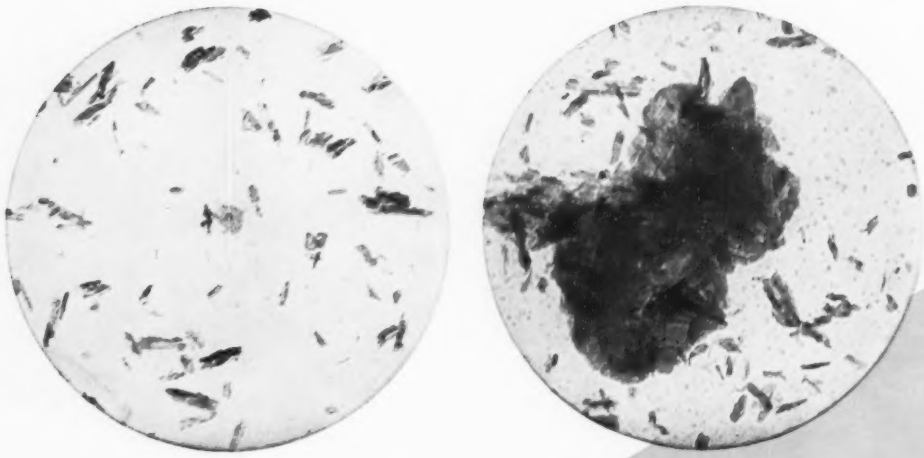
'Celaire' Trademark Use

Celanese Corp. of America has set up a program licensing the use of its trademark Celaire for its carpet fibers. Celaire identifies certain twist-set acetate staple fibers made especially for carpets. The licensing agreement grants carpet manufacturers the right to use the trademark subject to conditions stipulated by Celanese. At least 50% of the pile yarns must be Celanese virgin acetate staple fiber of at least 17 denier per filament, and the total weight of pile yarns per square yard must be at least 32 ounces. Licensees are expected to benefit from the extensive advertising and sales promotional campaign planned by Celanese.

New Wash-Wear Wrinkle

Progress has been reported in the development of methods for applying wash and wear treatments to finished cotton garments using standard commercial drycleaning equipment. Dr. Joseph R. Wiebush, director of research for the National Institute of Drycleaning, indicated that some of the problems encountered in research on the subject already have been solved, and none have been encountered which appear insurmountable. Dr. Wiebush also pointed out that there are about 34,000 drycleaning plants in the country, all of them equipped with boilers, presses, hot boxes and other equipment suited to the application of wash and wear finishes.

In pigment application a *"particle of difference"* is all the difference in the world!



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Photomicrographs (x 20,000) show improved uniformity of modern Carbanthrenes® (left) over old prototypes (right).

Allied Chemical

new sunlight resistant POLYETHYLENE

By Dr. Victor L. Erlich
DIRECTOR OF RESEARCH, REEVES BROS. INC.

THE USE of polyethylene filaments and fabrics for outdoor purposes has been hampered up to now by failures which became apparent under sunlight exposure over periods of time which were too short to be acceptable for the trade.

More or less all fibers, natural or synthetic, are affected by sunlight particularly under severe conditions of temperature and humidity. Polyethylene, though resistant to water, is by itself subject to degradation more pronouncedly than are other synthetic fibers. This degradation under the effect of ultraviolet radiation occurs in presence of air. It results into a gradual breakdown of the polymer chain, and subsequently reduces tensile strength and residual elongation which in turn creates brittleness of the material.

The reaction takes place in the exposed surface layers of the material and, therefore, affects shapes of small cross-sections proportionately more than heavy gauges. This is the reason why thin films, thin fibers and fabrics are particularly sensitive to sunlight.

In this respect the linear or high density resins which became available during these last two years, seemed to be promising because they are less receptive to oxygen uptake than the conventional branched type or low density polymers. It was found, however, that this improvement was not sufficient to produce filaments and fabrics acceptable for outdoor exposure.

It is known that careful incorporation of well-dispersed carbon black has a protective effect. Other pigments also can be beneficial to some but not to a sufficient degree. The resin manufacturers are adding agents to protect the polymer against deterioration during the manufacturing processes but these stabilizers in themselves and as far as known up to now, have not been sufficiently effective in overcoming the sunlight deterioration problem.

Reeves, having recognized these difficulties, did not promote the use of polyethylene filaments for outdoor purposes. However, after many years of extensive research, Reeves has now developed a new Special "Reevon"* polyethylene filament that is stabilized to ultraviolet radiation in a wide range of colors including the brighter ones.

To demonstrate the results obtained, refer to the following diagrams. The curves which show the loss of breaking strength of filaments upon exposure to sunlamp irradiation represent the summary of results obtained in Reeves' Laboratories and in independent commercial laboratories.

Diagram 1 compares the specially processed Reevon filaments with conventional commercial filaments of the same diameters, and exposed under exactly the same conditions. The difference is dramatic.

For Diagram 2, the new Reeves' process is compared for black filaments. Even here a considerable difference is apparent in favor of the special Reevon stabilized filament. It should be mentioned that 1,000 Regular Sunlamp hours can be correlated to an average of six months southern outdoor exposure whereas High Energy Sunlamp exposure of 1,000 hours is estimated to be equivalent to outdoor exposures of between one and two years depending on prevailing conditions.

* Reg. T.M.

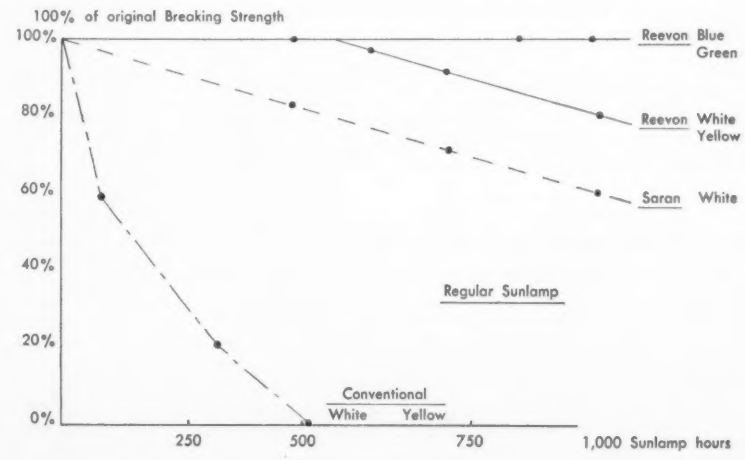

Diagram #1

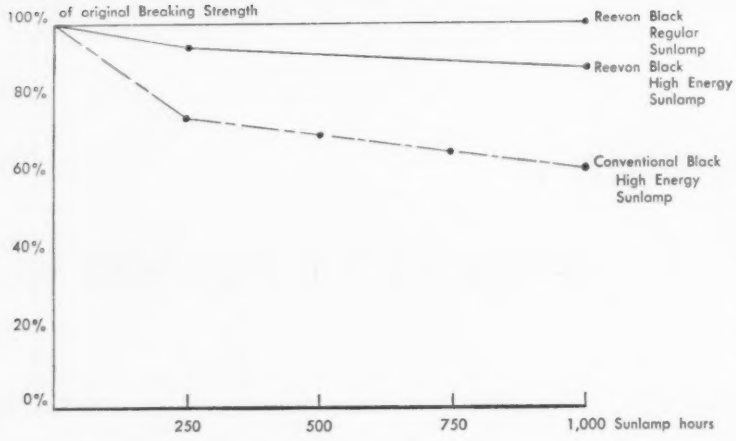

Diagram #2

Although the problem of sunlight resistance was of prime importance, some of the mechanical properties of the new high tenacity fibers were a matter of concern because the hand and elasticity of such fibers and fabrics needed improvements. These improvements are now incorporated into the new Reevon filaments.

It is the opinion of Reeves Brothers that the new special Reevon filaments can now be offered to the trade, because these fibers and fabrics meet commercially acceptable requirements as imposed by the conditions of outdoor exposure.

In Diagrams 1 and 3 Reevon is compared with Saran. The tested Saran filaments show losses in breaking strength which are percentage-wise comparable to those of Reevon filaments. But the latter, as suggested for outdoor fabrics, have a breaking strength considerably greater than Saran of similar diameter.

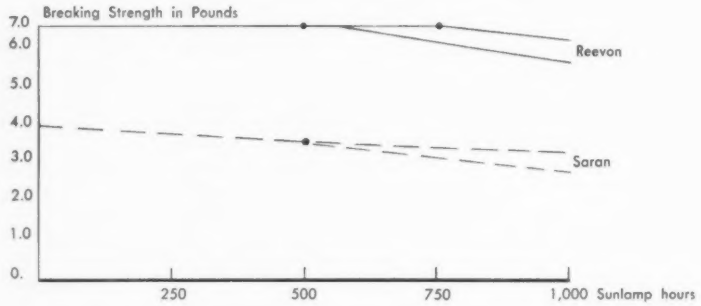

Diagram #3

Yarn Count Standard

A new Tentative Textile Standard, No. 3a—"Yarn Count Systems and Their Conversions"—has been published by the Textile Institute, 10 Blackfriars St., Manchester 3, England. The International Organisation for Standardisation conference in 1956 recommended that a universal direct system be adopted by all member nations and that this system should be the Tex system. The growing use of yarns containing more than one kind of fiber, and of fabrics containing different fiber yarns, made it evident that the adoption of a single yarn count system might avoid confusion and save time. Currently, there are many ways of designating yarn count (or number) and which may be classified in two groups—direct and indirect systems.

A new code of professional conduct for chartered textile technologists has been submitted at the annual meeting in Nottingham on April 23. The new disciplinary section of the code is intended to complete the provisions of the Institute's charter and by-laws and bring them into line with general practice.

AATCC Meeting Oct. 30 to Nov. 1

The American Association of Textile Chemists and Colorists will hold its 37th annual national convention, under the auspices of the Western Region, at the Conrad Hilton Hotel, Chicago, Ill., on October 30 and 31 and November 1, 1958. Five technical programs are scheduled and will concern activities of current interest in the textile industry. The various technical committees of the association will present exhibits relating to each group's activities.

New Improved Cellulose

Rayonier Inc. has developed a new cellulose, "Rayofiber," for the manufacture of all grades of rayon staple. The new product is said to answer the need for a single grade of chemical cellulose which will meet all the varied requirements of staple fiber manufacture. Rayofiber is priced at $195 a ton, less than 5% above that of pulp now being used in manufacture of conventional rayon staple. Rayonier reports its new cellulose has low gamma cellulose content, low total ash and calcium, low content of metallic constituents, reduced content of ether extractives, and good dyeing characteristics. *For further information write the editors.*

Wool Clothing Output Drops

The number of civilian men over 18 years of age in the U. S. increased 1% in 1957 to 51,399,000 but production of most items of men's wool clothing declined last year. Output of all types of men's suits, according to The Wool Bureau, came to 20,000,000 units in 1957, about 900,000 or 2% less than in 1956. Production of overcoats and topcoats dropped off even more sharply in 1957, by 39% to 3,700,000 units. The decline in output of all types of separate trousers slumped 10% to 63,800,000 units.

Last year also witnessed a decline in production of woven wool fabrics for civilian men's and boys' wear, the bureau reported. Total fabric output was 127,000,000 yards, 18% less than the 154,000,000 yards turned out in 1956. Of the 1957 total, worsteds accounted for 58,000,000 yards, down 21% from 1956, and woolens for 69,000,000 yards, a drop of 15%.

A new help in cutting mill costs, producing better fabrics

VARIANCE ANALYSIS

By Norbert Lloyd Enrick
INSTITUTE OF TEXTILE TECHNOLOGY

Recent years have seen increasing uses of statistical variance analysis in experimental investigations in the laboratory and in the mill. This article explains in non-mathematical language how this statistical tool works as an aid in reducing processing costs and improving product quality. The convenient tabulations and step-by-step procedures provided here will facilitate the reader's use of this time-saving technique in his own research work in the mill.

HOW CAN variance analysis simplify experimental investigations in the laboratory and in the mill, and at the same time furnish more information than otherwise possible? To demonstrate this point, we may examine two typical examples from weaving and spinning applications.

Weaving Investigation

In order to find out the best warp sizing treatment, it was desired to check on the effect of four different sizing treatments on warp stops in weaving. Other factors believed of importance on stops were the type of loom used and the time periods of weaving, associated with different humidity conditions. As a result, the experiment was concerned with three major factors: (1) Four sizing treatments, designated A, B, C, D; (2) Four types of looms, numbered 1, 2, 3, 4; and (3) Four equal-length time periods, I, II, III, and IV.

	Loom 1	Loom 2	Loom 3	Loom 4
ime Period I	Size A	Size B	Size C	Size D
ime Period II	Size B	Size A	Size D	Size C
ime Period III	Size C	Size D	Size B	Size A
ime Period IV	Size D	Size C	Size A	Size B

Table 1—EXPERIMENTAL DESIGN OF WEAVING EXPERIMENT. In this arrangement each loom runs at all time periods and on all sizes.

Ordinarily, the investigation of *four* sizing treatments with *four* types of looms at *four* distinct time periods involves 4 x 4 x 4 or a total of 64 tests. However, the same objective can be accomplished with only 16 tests by combining each sizing treatment with each loom and time period so that each combination occurs only once. This is shown in Table 1. During weaving, the warp stops were recorded, giving the results in Table 2. All time periods were of equal length, and by changing the warps to different looms at the end of each period, each warp treatment had spent one period in each loom.

Table 2—WARP STOPS RECORDED BY LOOM, TIME PERIOD AND SIZE USED

Calculation Steps

In evaluating the results of the experiment, a series of straightforward calculation steps may be used, as presented in Table 3, followed by the further steps in Table 4. The method is self-explanatory from these tables. However, the term "Degrees of Freedom," (written often as "DF"), needs some discussion. Basically, "degrees of freedom" means "one less than the number tested," as illustrated in Figure 1. Thus, there was a total of 16 tests, and therefore there were only 15 degrees of freedom. Similarly, each of the factors of size, looms and periods involved four tests, so each

Fig. 1—The idea of "Degrees of Freedom" being one less than the number sampled can be visualized from the pea-and-three-shells game. Even though there are **three** shells, any one of which may hide the pea, it is apparent that only a maximum of **two** shells need be lifted to predict the third. Had there been five shells, we would have had to lift four shells. Thus, Degrees of Freedom is one less than the number tested.

	Loom 1	Loom 2	Loom 3	Loom 4	Period Totals	Period Average
Period I	(A) 54	(B) 29	(C) 71	(D) 44	198	49.5
Period II	(B) 59	(A) 22	(D) 100	(C) 22	203	50.8
Period III	(C) 40	(D) 38	(B) 79	(A) 31	188	47.0
Period IV	(D) 83	(C) 29	(A) 100	(B) 27	239	59.8
Loom Totals	236	118	350	124	828	-
Loom Averages	59.0	29.5	87.5	31.0	-	51.8

Size Summary Totals	Size Summary Average
(A) 207	(A) 51.8
(B) 194	(B) 48.5
(C) 162	(C) 40.5
(D) 265	(D) 66.3
828	-
-	51.8

EXPERIMENTAL FACTOR	TESTS PER FACTOR	GROSS SUM OF SQUARES*	LESS C**	NET SUM OF SQUARES
Sizes	4	$(207^2 + 194^2 + 162^2 + 265^2)/4$ = 44,239	42,849	1,390
Looms	4	$(236^2 + 118^2 + 350^2 + 124^2)/4$ = 51,874	42,849	9,025
Periods	4	$(198^2 + 203^2 + 118^2 + 239^2)/4$ = 43,219	42,849	370
Total	-	$54^2 + 59^2$ + all remaining 14 individual values squared . . . . . = 53,888	42,849	11,039
Unexplained				254***

Notes: * These values are the squares of the warp stop test results.

** "C" is the Correction Factor, which is subtracted from the Gross Sum of Squares to find Net Sum of Squares as shown. "C" is obtained by squaring the total of the test results, 828, and dividing the squared value by the number of tests in the experiment, 16.

*** The "Unexplained" value represents "testing error" and is found in the "Net Sum of Squares Column" by subtracting the entries for Sizes, Looms and Periods from the Total. Thus 11,039 - 370 - 9,025 - 1,390 yields 254 for the unexplained term.

Table 3. CALCULATION OF SUMS OF SQUARES FOR WEAVING EXPERIMENT (The Sums of Squares computed here for the Weaving Data are values needed as stepping stones in the calculation of the final results in Table 4).

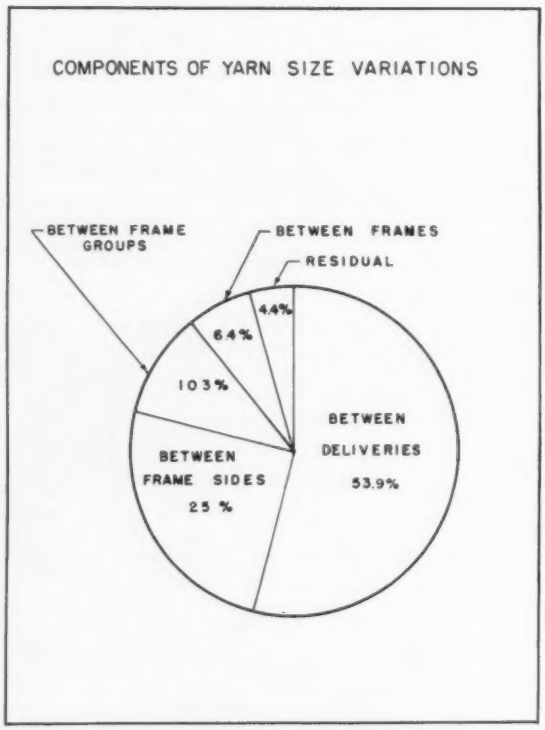

Figure 2

had only 3 degrees of freedom. By subtracting from the total DF of 15 the DF's of 3, 3 and 3 for sizes, looms and periods, we obtain the number 6 for DF of the unexplained variation. This variation cannot be explained by the factors tested, and is therefore ascribable to "experimental error".

Conclusions from Weaving Experiment

Having performed the calculations, we are now ready to draw conclusions from the experiment. Examination of Table 4 reveals that the effects of sizing treatments and looms were significant at the 95% confidence level. Therefore the test results in Table 2, showing sizing treatment C and loom 2 to yield the lowest stops are considered real and not ascribable to possible chance fluctuations in sampling and testing. In further mill operation, therefore, sizing treatment C and loom type 2 ought to give the lowest rate of loom stops. On the other hand, the effects of time periods could *not* be shown significant, meaning that over the range of humidities involved at the various time periods, the effect did not show up as important. The relative importance of the factors studied is brought out visually in Figure 2, using the percentages from line "i" in Table 4.

Spinning Investigation

Management of a spinning mill had become concerned about the relatively high skein-to-skein variation in its 30's yarn. In order to determine the

(Continued on Page 50)

TABLE 4. VARIANCE ANALYSIS CALCULATIONS

		Sizes	*Looms*	*Periods*	*Unexplained*	*Total*
a.	Sum of squares	1,390	9,025	370	254	11,039
b.	Degrees of freedom	3	3	3	6	15
c.	Mean square (a/b)	463	3,008	123	42*	—
d.	F-ratio (c/42)	11	72	3	—	—
e.	Minimum F-ratio needed for significance**	4.8	4.8	4.8	—	—
f.	*Is effect significant?*	Yes	Yes	No	—	—
g.	Tests per experimental factor	4	4	4	—	—
h.	*Variance* (c/42g)	105	744	20	42	911
i.	Relative importance of experimental factor, (h/911) x 100	11.5%	81.7%	2.2%	4.6%	100%

Notes: * This is the "unexplained" or "experimental error" factor. All other factors are divided by this value to obtain the F-ratio as shown in line "d." Thus, 436/42 = 11.0.

** From Table 5 of F-Ratios, for 3 Degrees of freedom in the larger meansquare (viz., sizings, looms, periods) and 6 Degrees of freedom in the unexplained meansquare, a minimum F of 4.8 is needed for the 95% Confidence Level of Significance. Any ratios below 4.8 are therefore not significant for this example.

Conclusions: It is found that the effects of sizing treatments and looms were significant at the 95% confidence level, while the effects of time period were not significant. The relative importance of each factor in regard to resultant warp stops is shown in Line "i".

Caustic soda and white reinforcing pigments, basic Columbia-Southern chemicals, are used throughout many industries. World's

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The versatile basic chemicals brighten the prospect for continual improvement of almost all products and processes. Columbia-Southern, a leading producer of these essential industrial chemicals, can be a big help to your business as both supplier and technical adviser. Call Columbia-Southern with your next order. You'll soon see why Columbia-Southern chemicals, research, service, and technical assistance help brighten the future for products. The Columbia-Southern Chemical Corporation, One Gateway Center, Pittsburgh 22, Pennsylvania. Offices in principal cities. In Canada: Standard Chemical Limited.

$NaHCO_3$—Sodium Bicarbonate • $CaCl_2$—Calcium Chloride • Na_2SO_4—Sodium Sulfate
KOH—Caustic Potash • CCl_4—Carbon Tetrachloride • NH_3—Anhydrous Ammonia

first practicable all-colored tires, above, were developed by Columbia-Southern. You'll be seeing more—many more.

THE FUTURE FOR SO MANY PRODUCTS

LOOK AT Cl_2—CHLORINE

Highly reactive chlorine's transforming touch creates thousands of molecular regroupings necessary to economical processing of products ranging from solvents to plastics, wonder drugs to refrigerants.

LOOK AT NaOH—CAUSTIC SODA

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LOOK AT Na_2CO_3—SODA ASH

This versatile alkali serves as basic raw material or essential "refiner" in the manufacture of glass, chemicals, detergents, ferrous and non-ferrous metals, pigments, soap, textiles, paper and many other items.

LOOK AT H_2O_2—HYDROGEN PEROXIDE

One of Columbia-Southern's newer products, this compliant chemical has a range of reactions that permits its use for bleaching paper and textiles, as a rocket propellant, as a reagent in organic syntheses.

COLUMBIA-SOUTHERN CHEMICAL CORPORATION A Subsidiary of Pittsburgh Plate Glass Company

HCl—Muriatic Acid • $TiCl_4$—Titanium Tetrachloride • $Ca(OCl)_2$—Calcium Hypochlorite
Chlorinated Solvents • Chlorinated Benzenes • Agricultural Chemicals • Chrome Chemicals

bonding agents for nonwovens

By Reiner G. Stoll
CELANESE CORP. OF AMERICA

THE BONDING AGENTS in nonwoven fabrics have sometimes been referred to as the vehicle which looms the fibers together. Indeed, the binding agent's function is to provide strength, durability, flexibility and many other essential performance characteristics.

However, it would be incorrect to assume that the specific characteristics obtained in woven and knitted fabrics could be duplicated in nonwoven fabrics by a proper binder system. Instead, it should be emphasized that the chemical binding of a mass of oriented or disoriented fibers into nonwoven products offers possibilities of creating novel and unique fabric characteristics, rather than being a cheap "ersatz" for woven and knitted fabrics.

The technology of fiber bonding as it applies to our modern nonwoven fabrics is still in its infancy. It is by no means a simple technique. Plenty of chemistry and chemical engineering is involved, and it requires as much art and skill as the weaving and finishing of conventional fabrics.

In other words, chemical competence in a relatively wide field of chemistry and a great deal of practical experience will be required to be successful in producing bonded fiber products. I must emphasize this point for manufacturers who consider going into the nonwoven fabric business. They will have to examine very carefully how they can acquire the necessary technical know-how and manufacturing skill.

In describing the bonding mechanism, two major principles can be distinguished:

1) The binding of the fibers by means of a cement or glue.
2) The welding of the fibers by the admixture of thermoplastic fibers to a fiber web made from fibers related or unrelated to the thermoplastic fibers.

In the so-called welding process of thermoplastic fiber bonding, the bonding can be restricted to a relatively small area encompassing more or less the spot welding of one fiber to an adjacent one. Theoretically, this method offers several advantages over the bonding using special cement, which has the disadvantage of spreading out, thus coating and bonding large surface areas.

Spot welding is possible by using such thermoplastic fibers as vinyon or plasticized acetate. Nylon, "Dacron" or the acrylic fibers can also be plasticized and serve as binder fibers. The method of bonding nonwovens by the use of thermoplastic fibers has been known for quite some time. However, it has found only limited application due to certain technical shortcomings and the more rapid progress made with the bonding of the fibers by a special cement.

During the past few years half a dozen major chemical companies have developed a large number of bonding agents, many of which have already found commercial use in nonwoven fabrics. As a matter of fact, more than 200 proprietary products falling generally into the lattices and thermoplastic and thermosetting resin classifications are available for bonding nonwoven fabrics. Chemically, they belong to more than a dozen different basic types, but they also differ widely in properties and their physical form. Not counting the thermoplastic fibers I have already mentioned, the following groups of bonding agents can be mentioned:

1) Emulsions. They are by far the most important and include a variety of chemically different products.
2) Thermosetting and thermoplastic powders. These are still relatively new but will most likely gain importance.
3) Solution type binders. Among these, solutions of starch, polyvinyl alcohol, casein andalginate have found use in specific applications. Solvent solutions of rubber or other lattices are suitable, but not too practical due to the commercial hazard involved. The use of solvents and plasticizers in combination with thermoplastic fibers has been mentioned.

Among the emulsions which at the present time are commercially the most important bonding systems, the following basic types have gained primary importance: butadiene-styrene, butadiene-acrylonitrile, vinyl, chloride and vinyl co-polymers, acrylic polymers and polyvinyl acetate. Each of these products is supplied in a variety of specific physical and chemical characteristics to suit the various application methods and end use requirements.

In addition, other products are used for special applications or in combination with the aforementioned basic binders to enhance specific properties such as chemical resistance, light and heat stability, ageing resistance, improve bonding strength, toughness or to give greater flexibility and softness. As examples, the following may be mentioned in this connection: urea formaldehyde resins, phenol formaldehyde and other phenolic resins, melamine and melamine urea resins, vinylpyridine, vinylidene chloride polymers and others. To complete a binder formulation, other components must be added. To name just a few:
Emulsifiers and stabilizers to control particle size and stability.
Catalysts and short stoppers to regulate polymerization.
Antioxidants, bacteriacides and other inhibitors to provide good ageing characteristics.

For the application of these bonding agents, five distinctly different bonding processes are known at the present time. Each one represents a specific binder application method and requires special equipment. These processes are:

1) Continuous impregnation by saturation of the web with emulsion type binders or

(Continued at bottom Page 50)

Variance Analysis

(Continued from Page 44)

source of this excessive variation, a variance analysis was performed on the mill's sizing data. This showed the sources of variation and the relative importance of each, as depicted in Figure 3. It is noted that the variation between deliveries was the greatest source of trouble, followed by variation between frame sides. A check revealed waste-clogged suspension holders and differences in roll wear to be the causes, which were subsequently corrected. As a result, the mill's relatively high yarn size variation coefficient of 4.2% was gradually reduced to a very satisfactory level of 2.8%, accompanied by a decrease in spinning ends-down resulting from the lowered variability of the stock.

Thus, analysis of variance aids in the efficient conduct of mill experiments leading to improved quality and lowered processing costs.

Acknowledgment: The data pertaining to the weaving illustration are due to Mr. L. H. C. Tippett as presented at the First Industrial Statistics Conference at Massachusetts Institute of Technology. The spinning data were kindly released by a Southern mill, where the writer had aided in the experimental investigation.

CHART SHOWING RELATIVE IMPORTANCE OF LOOMS, SIZING TREATMENTS AND PERIODS IN WEAVING EXPERIMENT.

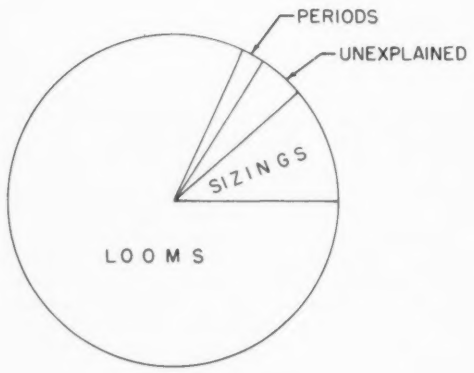


Figure 3

TABLE 5. MINIMUM F-RATIOS NEEDED FOR 95% SIGNIFICANCE

D.F. for Smaller Mean Square	D. F. for Larger Mean Square Value								
	1	2	3	4	5	6	8	12	24
2	18.5	19.0	19.2	19.2	19.3	19.3	19.4	19.4	19.4
3	10.1	9.6	9.3	9.1	9.0	8.9	8.8	8.7	8.6
4	7.7	6.9	6.6	6.4	6.3	6.2	6.0	5.9	5.8
5	6.6	5.8	5.4	5.2	5.1	5.0	4.8	4.7	4.5
6	6.0	5.1	4.8	4.5	4.4	4.3	4.2	4.0	3.8
8	5.3	4.5	4.1	3.8	3.7	3.6	3.4	3.3	3.1
10	5.0	4.1	3.7	3.5	3.3	3.2	3.1	2.9	2.7

Note: DF = Degrees of Freedom.

Bonding Agents

(Continued from Page 49)

possibly solution type binding agents.

2) Spray bonding by the surface spray application of emulsion or solvent plasticizer type binder agents.
3) Foam application of specific bonding resins of the emulsion type by padding, doctor blade or roller disc arrangements.
4) Dry powder bonding using thermosetting or thermoplastic resin powders.
5) Discontinuous or pattern bonding by the application of emulsion or plasticizer type binders with print or embossing rollers.

It is unnecessary in this discussion to go into more technical details. This general outline of the binder systems and their application techniques should have made the point clear that plenty of chemistry and chemical engineering and manufacturing know-how is involved.

What are the major problems remaining in the bonding of fiber webs, and what kind of developments can be expected in the near future?

The light and ageing stability—especially the prevention of color formation by ageing—and the improvement of toughness, softness and resilience will be possible by careful formulation of already commercially or experimentally available materials. This should make it possible to increase the acceptance of the currently known nonwoven fabrics in the established fields of application.

In order to find new applications, especially in fields where drape, flexibility and a relatively high strength—both dry and wet—are required, significant improvements are required. These improvements may not be easy to attain, since many of the requirements are actually conflicting. However, improvements, and, indeed, nonwoven fabrics with novel characteristics may result from the use of new chemical bonding agents and by the use of thermoplastic fibers and thermosetting and thermoplastic powders.

Form New Fiber Firm

A new fiber firm, Polyarns Inc., has been formed in Canadaigua, N. Y., to produce acrylonitrile-styrene, vinyl chloride-acetate, nylon and polyethylene monofilaments under a licensing agreement with Polymers, Inc., of Middlebury, Vt. David R. Peet organized Polyarns, which plans an initial capacity of 360,000 pounds annually.

Management for Engineers

"Management for Engineers," by Roger C. Heimer, associate professor of mechanical engineering, Villanova University, takes a practical look at the impact of costs, standards, materials, methods, taxes, insurance, power, equipment, labor and ethics. The author shows the relationship between them and engineering considerations. The 453-page book, published by McGraw-Hill Book Co., Inc., costs $6.75 per copy.

All-Nylon Bike Tire

The first bicycle tire of all nylon cord construction is now being marketed by The Goodyear Tire & Rubber Co. Called the Surburbanite "175" nylon, the tire is said to have a stronger, more resilient carcass than conventional bicycle tires. Its open lug design, selfcleaning cleats and bladed riding ribs reportedly give the tire firm traction in snow, sand and mud, and on icy or wet surfaces.

Non-Slip Nylon Thread

Mason Silk Co., New York City, has announced development of what it terms a new nylon thread that is not slippery. A company spokesman said the thread differed from earlier types in that the fibers are "distorted" to roughen them so that stitches "lock together." This feature gives it its name, Stitchlock, for which a patent has been applied. Non-slip nylon thread, it was said, would avoid such sewing problems as run-back and skip stitches.

'No-Sew' Woven Labels

"No-Sew" labels, that can be looped right into a garment while it is being made, are now available from the Finlan Woven Label Co. Finlan says three advantages of "No-Sew" are: eliminates the extra handling operation now necessary with ordinary labels sewn in by hand or machine; insures permanent identification since the label will not loosen, and eliminates "railway track" stitches. Girard Knitting Mills is reported to be using the new label on an experimental basis. *For further information write the editors.*

REPORT FROM EUROPE

BY SPECIAL CORRESPONDENT

Euromart Fears Make Strange Bedfellows

GENEVA—The United States and Japan don't often see eye to eye on the problems of world trade in textiles. Thus a minor historical note was sounded here when U.S. and Japanese officials agreed that European Common Market would threaten each nation's respective textile industries.

The scene was an intersessional meeting of member countries to the General Agreement for Tariffs and Trade. U. S. spokesman I. C. Frank, deputy director of the Office of International Trade of the State Dept., said the association of Europe's overseas territories with the common market would threaten U. S. textile and cotton industries.

Japanese Viewpoint is Similar

Ichiro Kawaski, Japanese minister to United Nations at Geneva, said his country's textile and clothing exports to Africa and Asia would be hit by European Common Market if Continent's overseas territories were included in the bloc.

British also supported the U.S.-Japanese stand. C. W. Jardine, delegate of the Board of Trade, saw his nation's textile exports squeezed out of underdeveloped country markets associated with European group.

ILO Makes Textile News

The Sixth meeting of the Textile Committee of the International Labor Organization, at Geneva, produced a spate of textile news. The Russian delegate disclosed that between now and 1960, automatic looms would compose 60% of USSR's total and there would be a complete switchover from dual to single process spinning machines.

Soviet Chief Inspector for Light Industry Nicolai Nicolaivitch also said that in 1957, cotton fabric output had risen 140% since 1940; wool fabrics, 230%; linens, 150%, and silks ten-and-a-half times.

Italian Textile Sales Lag

E. M. Bianchi, Italian management representative at the ILO meeting, said poor demand and not mechanization has caused Italy's drop in textile employment. . . .Israel's textile industry, said Solomon Good-Arye, delegate from the Ministry of Commerce and Industry, now ranks third among the country's industries, and it is planned to double the number of cotton spindles and treble weaving, finishing and dyeing capacity. . . .A. N. Buch, India's textile labor representative, said 18,000 new automatic looms were installed in the past two years; this has hurt unemployment absorption, he said.

Snia Dislikes U. S. Cotton

Italy's man-made fiber industry has been "seriously affected" by U. S. farm material disposal policies, Snia Viscosa charged in its annual report. It said Italy's rayon exports fell 12.3%; staple exports, 12.4%, but that exports of textiles and man-made fabrics rose 6.2%. The market has remained quiet into the first months of 1958, Snia noted.

Export Subsidies for Italy's Mills

A few weeks before the Snia report, the Italian Official Gazette announced new textile fiber export subsidies. Here are a few, in lira per net kilogram of exports: viscose staple, 29; bulk dyed viscose staple, 35; crude acetate staple, 56; crude viscose yarn, 52; yarn dyed acetate, 123.5; crude cupra yarn, 50, yarn dyed cupra, 80.5.

Good Terylene Year in U.K.

Imperial Chemical Industries' annual report reflected an excellent year for Terylene polyester fibers, both continuous filament and staple. Sales were doubled. Production was about 22 million pounds which should rise to 30 million this year and up to 50 million in 1960. Among new uses were coal mine conveyor belts. . . .ICI also announced it would launch its biggest Terylene advertising campaign in September in women's fashion and household magazines.

Europe's Petrochemicals

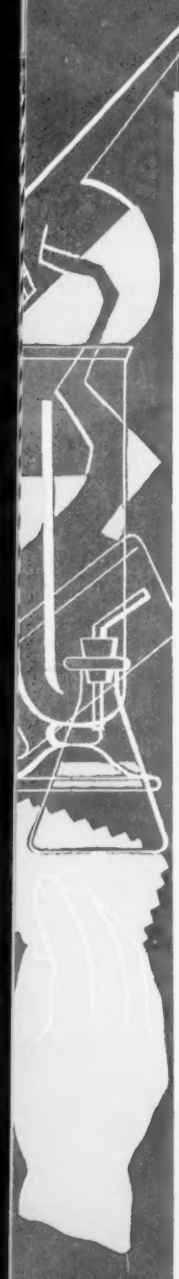
European Chemical Output to Rise

The Organization for European Economic Cooperation, in Paris, reported that its members would spend some $661 million in the next 2½ years to expand petrochemical plants. Emphasis would be on butyl and S type synthetic rubber; polyethylene; ethylene oxide derivatives, and solvents and raw materials for plastics and detergents. In 1960 output should be 760,000 tons total carbon content higher than 1956's 472,000.

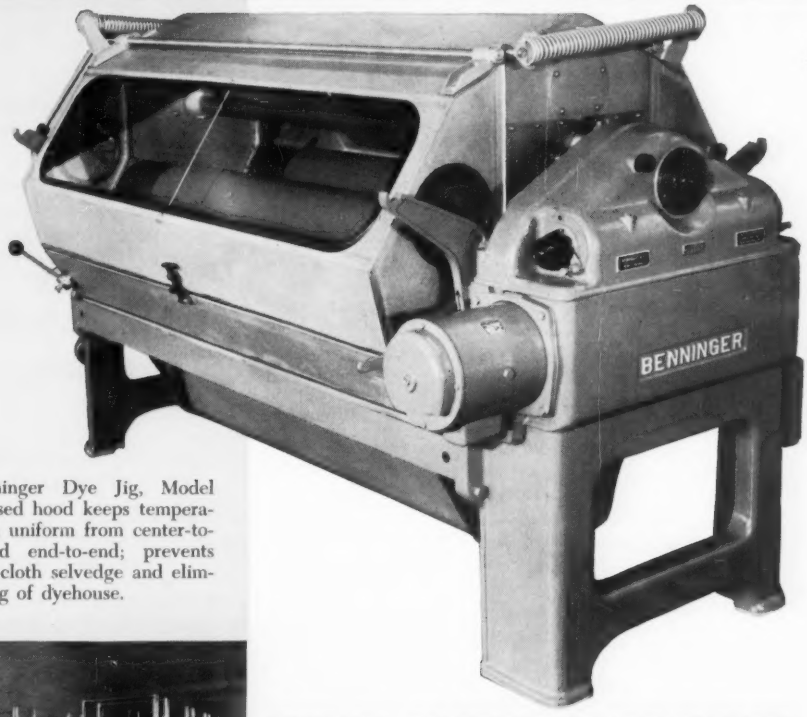
Perlon for Denmark?

(Continued on Page 99)

DYEING and FINISHING
SECTION

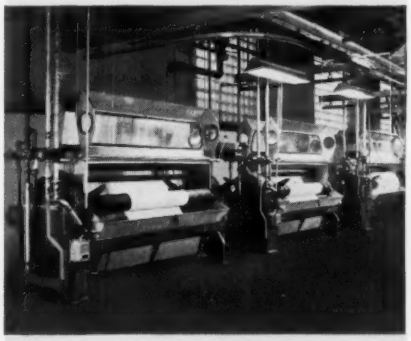


BLEACHING
PRINTING
SPECIAL
PROCESSING



Latest Benninger Dye Jig, Model LFM. Enclosed hood keeps temperature of cloth uniform from center-to-selvedge and end-to-end; prevents oxidation of cloth selvedge and eliminates fogging of dyehouse.

Erection floor view showing eleven Benninger Dye Jigs ready for shipment.



Installation of six Benninger Dye Jigs in warp-knitting mill in Pennsylvania

Member of
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IT'S BENNINGER for high-production, automatic jig dyeing

In Swiss-made Benninger Dye Jigs, sold and serviced by Butterworth, you get all the automatic features that mean absolutely reliable dyeing results, high-production, and minimum costs.

- Creaseless runs on any kind of cloth – entirely frictionless contact between expanding rollers and the cloth; adjustable controls keep cloth under slight but constant tension.
- Cloth-running speeds practically constant – reversing and stopping device, and self-acting passage counter, both completely automatic. No stop and start!
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- Easy to operate, even for inexperienced dyehouse personnel – one man can operate up to six machines, depending on type of cloth and dyeing process employed.

For full details on Benninger Dye Jigs, call or write us today.

H. W. BUTTERWORTH & SONS COMPANY
A Division of Van Norman Industries, Inc.
Bethayres, Pa.

BUTTERWORTH

how to apply latex backing

Use of latex as fabric backing is spreading. Here is a report on its advantages and best ways to apply it.

By Alvin Barg & Milton Slone
ALDON RUG MILLS, INC.

SHORTLY following the end of World War II latex began to be used in volume as a non-skid material on the backs of scatter rugs. This was in addition to its use as an upholstery backing.

By 1950 the tufted process for manufacturing carpets began a meteoric rise which was dependent on latex as a coating.

Today carpets of nearly all constructions are being coated (or back-sized) with a latex compound. Flat goods as well as pile fabrics for upholstery use are also being coated with a latex compound.

The advancement of the science of polymerization has resulted in many new latex materials being made available for use in carpet coating.

In fact the number of new latex materials being offered for sale has resulted in Aldon keeping a staff of technicians constantly evaluating new polymers to take advantage of improvements over our present coatings. We have recently built a latex compounding plant for our own use which incorporates the most modern equipment.

Many advantages result from this use of latex, some of which are summarized below:

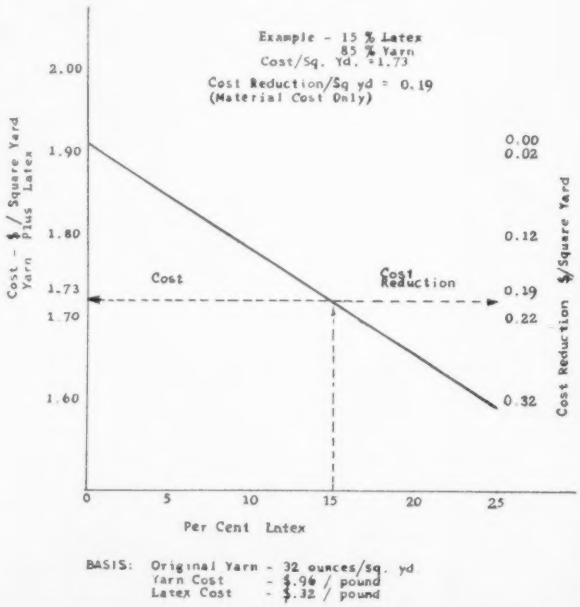
A. Original Manufacturer's Advantages
   1. Cost reductions
   2. Technical advantages
   3. Processing advantages
B. Processor's Advantages
   1. Cost reduction
   2. Ease of handling
C. Consumers' Advantages
   1. Better product value
   2. Better wear life

Further explanations of these advantages are:

Original Manufacturers Advantages

1. *Cost Reductions*—Frequently the use of a latex coating results in a lower cost per square yard (or lb.) of fabric. In most cases the cost of the yarn used in the fabric is higher than the cost of the latex coating. Thus, the same weight per square yard can be retained at a lower cost depending on the ratio of latex to fiber (see Graph I).

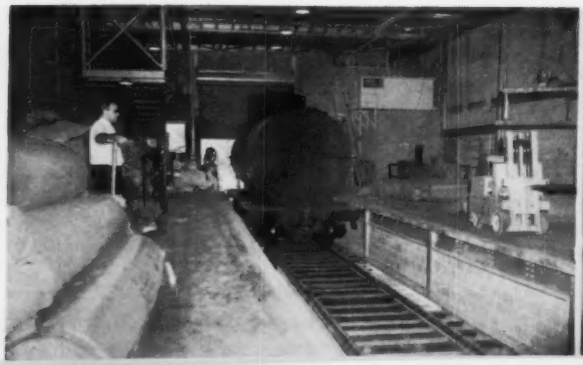
2. *Technical Advantages*—Proper selection of a raw latex and subsequent compounding can result in a coating which will serve as a lock for pile yarn. This is of particular importance in tufted goods or other constructed cut-pile goods wherein the pile yarn is not an integral part of the backing. Loop-pile fabrics generally must have some type of backing, such as latex, to prevent the pulling out of a row of loops.



Graph I—Cost reductions effected by Latex Coating.

Specifically designed, a latex coating may change the fabric hand so as to up-grade the goods. A loose, sleazy fabric can be coated to produce almost any degree of rigidity desired, or the extra weight, as slight as it may be, can often impart a hand giving

IN CARLOAD LOTS—(left) Raw latex arrives in tank cars at a special dock at Aldon Rug Mills' plant. (Right) Compounded latex is stored in these tanks ready for use.



Above right — birthplace of J. R. Geigy, Basle, Switzerland.

200 years Geigy

The history of synthetic dyestuffs is the history of Geigy

Two centuries ago, in the city of Basle, Switzerland, a native young merchant, Johann Rudolf Geigy, established a business as a dealer in "Materialwaren" . . . drugs, colours, pharmaceutical preparations and spices.

From inception, Geigy was associated with colouring. In 1859, three years after Perkin discovered mauve, Geigy entered the synthetic dyestuff field.

Being 200 years old is one thing but, celebrating 200 years of progress is something else. From a handful of people in 1758, Geigy today employs over 8,000 in over 40 Geigy companies throughout the world.

During these two centuries, Geigy has been privileged to supply the textile industry with many revolutionary dyestuffs, some of them history-making firsts that led to new and improved techniques in dyeing. In the years to come we shall continue to strive to make even greater contributions to the fields we serve by furnishing them with products of progress.

GEIGY DYESTUFFS: Division of Geigy Chemical Corporation, Saw Mill River Road, Ardsley, N. Y. Branches in all textile-producing centers.

Modern new Geigy plant at Ardsley, New York. ▲

▼ Geigy headquarters in Basle, Switzerland.

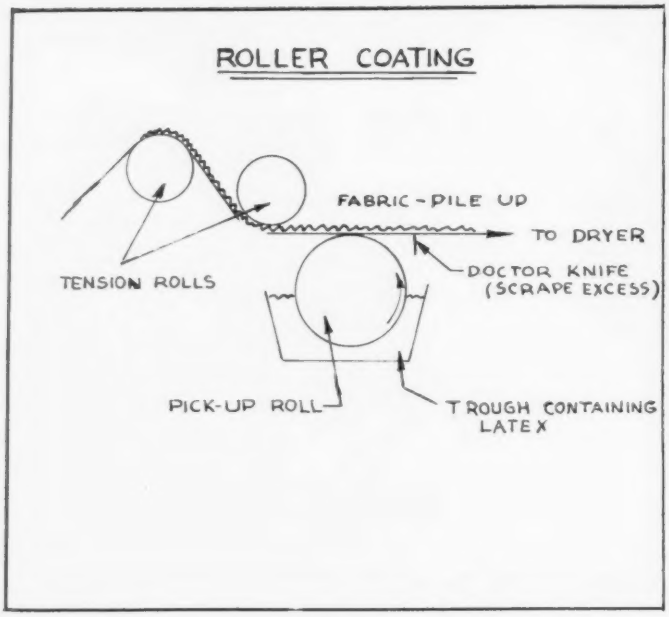


Diagram 1

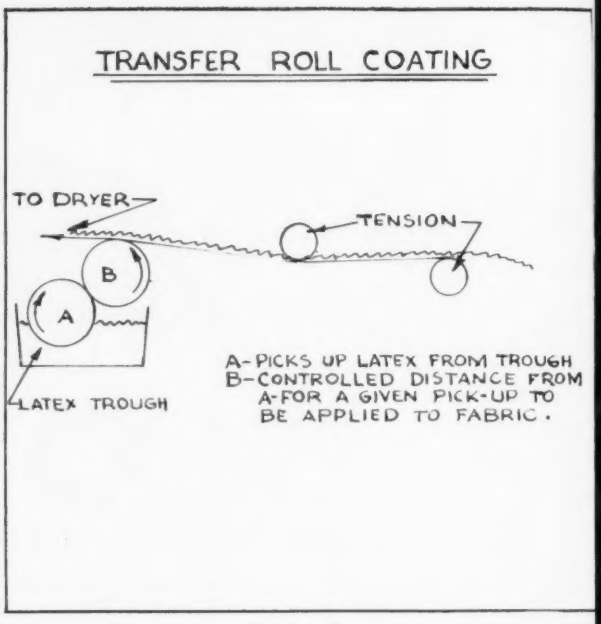


Diagram 2

the effect of a more expensive and heavier piece of unbacked goods.

Some latex coatings, for example, in the carpet industry, are used to make the carpet lay flat on the floor. Also the backing can be designed to dimensionally stabilize the carpet on the floor. A recent development claims to reduce static electricity in floor covering by proper selection of latex coating. Further, in the carpet field a latex coating can be applied so that non-skid properties will result.

Latex coatings can be used to increase the tensile strength of some fabrics.

3. *Processing Advantages*—A latex coating on a fabric to be subsequently piece dyed can reduce repairs due to damage in dyeing and subsequent processing.

Upholstery pile fabrics (friezes, for example) require a backing to anchor the pile during dyeing and generally a latex coating is used.

A latex coating can be designed to stabilize the fabrics so as to reduce to a minimum shrinkage during wet processing and subsequent drying. In addition the backing can serve to prevent creases in the fabric during wet processing.

A surface can be prepared for foam application with a light pre-coat of latex. For lamination purposes a latex coating can be applied so as to leave a tacky surface.

Consumers' Advantage

1. *Better Product Value*—Latex coatings can be designed to be lower in cost than fiber backing. A manufacturer, by reducing the weight of fiber backing and replacing with a lower cost latex, can put that saving into the face of the fabric resulting in a better wearing or appearing goods. Then, too, a cheaper material may be used as a backing and with a proper latex coating could effect savings that a manufacturer could pass onto the consumer with a better fabric face.

2. *Better Wear Life*—The dimensional stabilization of the fabric by latex coating can give the consumer a fabric with excellent launderability as far as shrinkage is concerned.

In addition a stabilized fabric (for example, floor covering) will not creep in use causing buckling and excessive wearing at the creases.

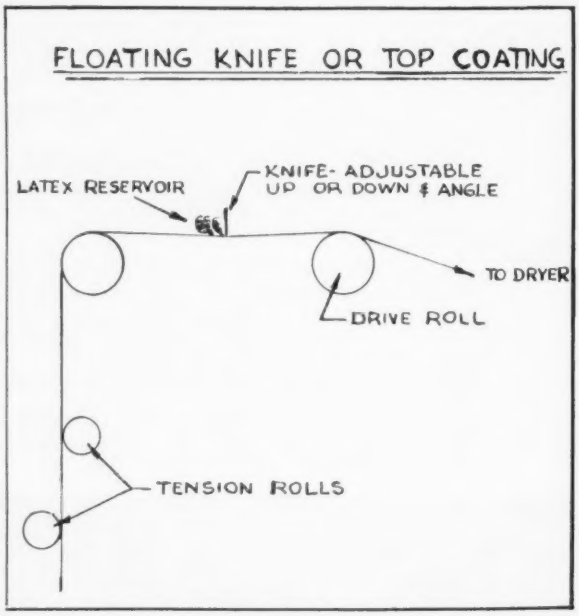


Diagram 3

Methods of Application

There are various methods for applying latex to a fabric and the following summarizes three important techniques:

A. Spray Coating
B. Kiss or roller coating (Diagrams 1 and 2)
C. Top or floating-knife spreading (Diagram 3)

The selection of the method to use depends on:

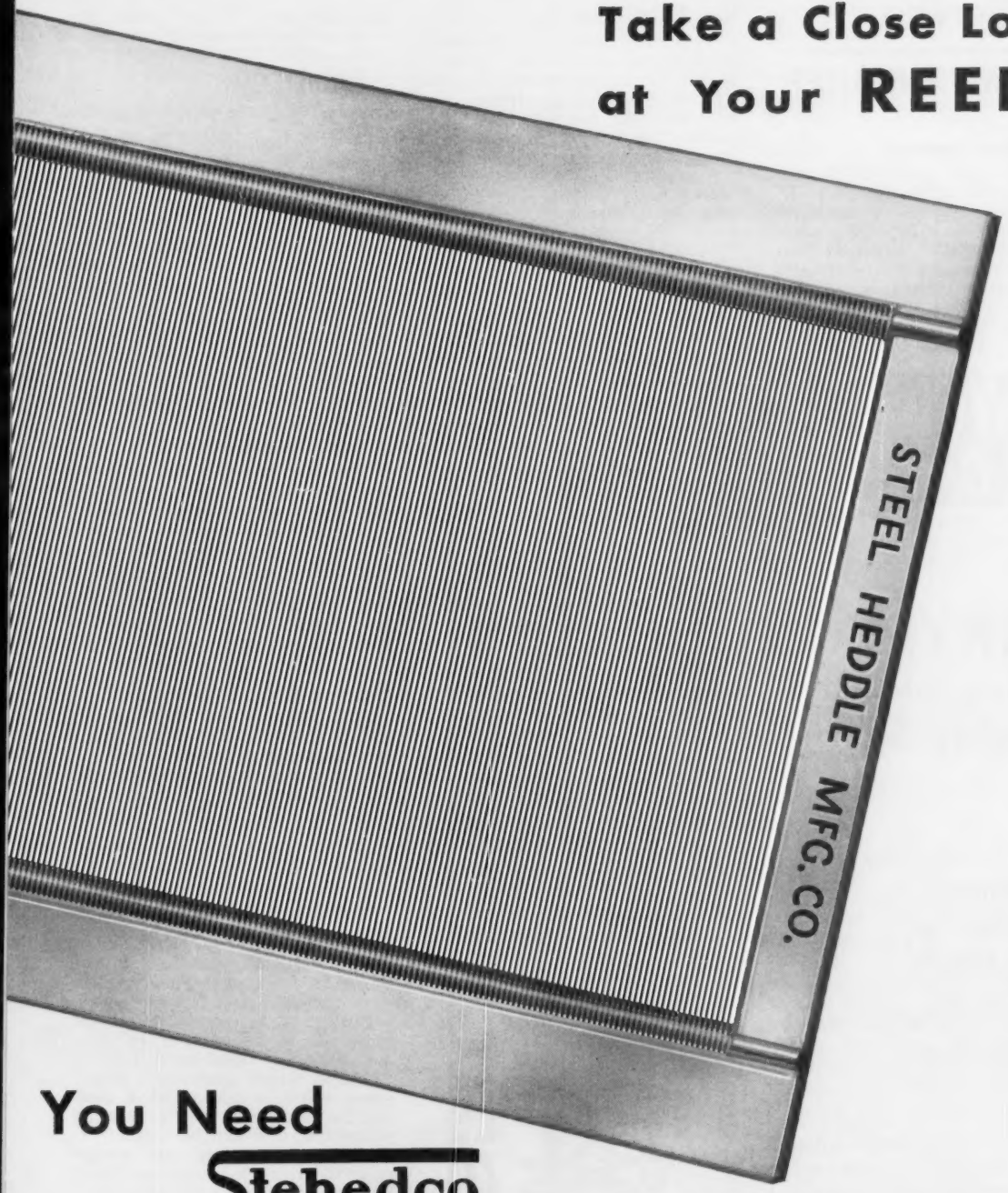
1. Weight of application desired
2. Fabric construction
3. Equipment investment

A. Spray Coating—This is the simplest method for controlling pickup to a minimum.

For very light application on highly absorbent goods this method would appear to be the choice.

(Continued on Page 59)

Take a Close Look at Your REEDS



You Need Stehedco Quality

You need Stehedco Quality Reeds to weave quality cloth with greatest economy. Constructed of finest quality materials by master craftsmen, you can be sure of having reeds that will give you longer trouble-free service and better quality production than ordinary reeds. In addition you get better delivery on any quantity, consistent with their fine quality. Order Stehedco Quality Reeds and be assured of complete satisfaction.

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For the DYER and FINISHER

New Wetter-Penetrant

Sole Chemical Corp. has issued technical bulletin No. 358-1 on its Sole-Terge S-2-S, an anion-active wetter-penetrant compatible with alkali, acid or salt systems. The compound is said to be useful at low percentage levels in a wide number of applications. *For copies of the bulletin write the editors.*

New Bluish-Brown Dye

Du Pont's Dyes and Chemicals Division has introduced Capracyl Brown HR, a new dye which gives a bluish-brown shade on filament or spun nylon and wool. Du Pont reports the dye has good fastness properties and is suited especially to continuous dyeing of wool rawstock. *For further information write the editors.*

Softener-Lubricant Data

Nopco Chemical Co. has released data report TX-29 on Nopcotex B, the firm's softener, lubricant and napping aid for natural and synthetic fibers, yarns and fabrics. The softener-lubricant is a 100%-active fatty derivative that is applied as an aqueous dispersion in the wet finishing operation. *For free copies of the report write the editors.*

Synthetic Resin Gum

Synthogum PR, a new synthetic resin gum in powdered form, has been developed by Hart Products Corp. The gum contains 90% active material and is said to combine high viscosity characteristics with ease of solution. Hart reports its low cost compared to natural gums makes it economical for all printing and thickening applications in the textile industry. *For further information write the editors.*

Silicone Catalyst

Proctor Chemical Co. has announced a catalyst, Curite S, specifically designed for use with silicone emulsions. The manufacturer reports the product not only promotes the proper cure acceleration of silicone water repellents but also is free of re-wetting properties that impair the spray rating. *For further information write the editors.*

Knitting Yarn Softener

Laurel Hydrocop & 3B Softener, for conditioning and lubricating knitting yarns, is being offered by Laurel Soap Manufacturing Co. Suitable for natural, bleached or dyed yarns, the products are easily prepared and form stable emulsions for application from emulsion troughs or any standard coning or winding machine. *For further information write the editors.*

New Green Dye for Nylon

Du Pont has added Capracyl Green 2Y to its line of Capracyl dyes for use on nylon and wool, and particularly recommends it for materials to be used as suitings, carpeting or upholstery fabrics. The dye, which produces a bright green color, is said to have good lightfastness and wet processing properties, and can be applied on all types of conventional equipment to rawstock, yarn or fabric of filament nylon, spun nylon or wool. *For futher information write the editors.*

Mitin Use in U. S.

Geigy Chemical Corp. estimates that its Mitin durable mothproofing compound has saved several billion dollars worth of apparel, home furnishings and other woolen materials since it was introduced 20 years ago. Mitin has been used in this country and Canada for the last 10 years. Geigy, this year, also is celebrating the 200th anniversary of its founding.

how to save on steam

By the Editors

IN TEXTILE WET PROCESSING steam is a very large and important item. Every factor in its production and consumption provides ample opportunities for profitable investigation. In most finishing operations, low pressure steam can be used.

In a plant generating its own power, high pressure steam can be produced, run through a bleeder type turbine for power and exhausted at the pressure necessary for low pressure mains. This will result in low power cost as the charge to power should be only the drop in energy from high pressure to low pressure steam. Obtaining low pressure steam by passing high pressure steam through reducing valves is wasteful.

A useful yard stick is the pounds of steam generated per yard of cloth finished. Comparison of this figure from different plants might be quite surprising. Such a comparison, for example, of two plants of approximately equal size and doing similar work showed that, in one plant, the steam generated per yard of cloth finished was three times the amount generated in the other plant.

One great source of waste of steam is the presence of valves to by-pass traps. It might be of advantage to by-pass a trap to get heat up quickly; but very often the by-pass is not closed promptly so steam continues to pass into the return line. The by-passes are usually situated so that they are not readily noticed and so may be overlooked.

One afternoon this figure of pounds of steam per yard of goods was being discussed with a mill manager who was worried about his costs. The possibility of by-pass valves being open was mentioned. He called his chief engineer and told him to go through the entire plant and see how many by-pass valves were then open. It was then 3:00 p.m. The plant had opened at 7:00 a.m., with some men coming in earlier to get heat up. When the chief engineer came back to report the manager was astounded to learn that virtually all the by-pass valves were open with consequent great waste of steam.

In one plant, which was very efficient, all by-passes were eliminated.

The desire and necessity for economy must permeate an entire organization if such a firm is to be successful and stand up under severe competition. One of the best ways to accomplish this is to make the personnel continually conscious of the need for economy by providing information. Installation of steam flow meters in each department can be a profitable investment. Providing each supervisor with daily or weekly steam consumption figures for his department will not only emphasize the importance of economy, but will also enable him to be constantly aware of what progress he is making. Alert plant supervisors should always keep an eye on the pounds of steam generated per yard of cloth finished.

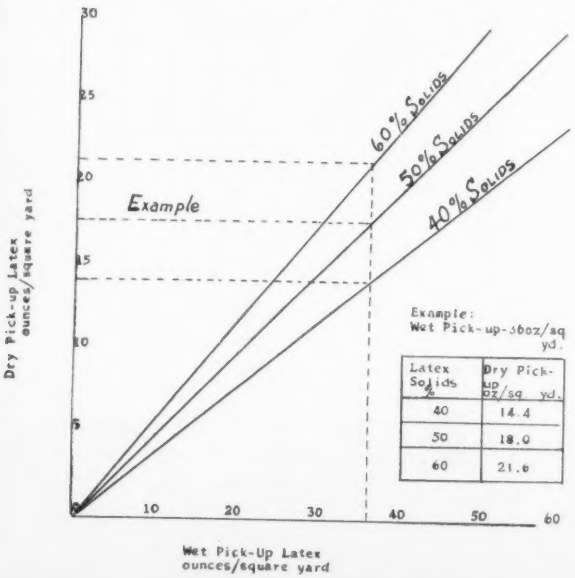
Latex

(Continued from Page 56)

Spraying minimizes penetration of the latex into the fabric.

For a very irregular surface, spraying would be the best technique.

One disadvantage of spraying is the loss of material due to overspraying and vapor loss.



Graph II—Wet Latex pick-up vs dry Latex pick-up for various Latex solids.

B. Kiss or Roller Coating:
This technique is used on almost all types of fabrics except the very absorbent type where penetration and weight pick-up must be controlled as in spraying.
Latex waste can be minimized with this system. Latex of almost any desired solids can be used in this system. A wide range of viscosities can be employed up to a maximum. At the higher viscosity levels this technique is not feasible.
There are a few operating variables to be considered in controlling pick-up by this method.
1. Fabric travel (speed)
2. Coater roll speed
3. Doctor Setting
4. Solids of Latex—see Graph II
5. Viscosity of Latex

C. Knife or Top Coating:
For thin flat goods run at high thruputs this method produces best results. The pick-up is readily controlled.

Among less tangible advantages to be found in the applications of latex back-coating in the carpet industry is the increase of the shock-absorbency of the floor covering. Thru the use of latex "heel-shocks," which add so much to carpet wear, are reduced and carpet life is increased. Similarly, the latex helps improve the sound-absorbing properties

(Continued on Page 68)

REPORT FROM JAPAN

By B. Mori

Funds for man-made fiber expansion may be lacking

OSAKA.—The Japanese program for expansion of synthetic textile production, in both variety of fibers and quantity is hitting a financial snag. The Government has actively advertised that it will view with favor tieups between Japanese producers and foreign firms for technical assistance in production of petrochemicals and synthetic fibers. Also these two industries have been given a high priority on domestic bank funds for capital requirements.

But now the banks say that funds required for the current fiscal year cannot be provided. The Government will not permit a larger percentage of investment and management participation by foreign partners in such enterprises. And so the only apparent alternative is a slow-down in the five-year expansion plan.

Acrylic Expansion Pushed

The man-made fibers industry here is eagerly pushing product-development work with acrylic and polyester fibers. Nowhere has this been more apparent than at the recent International Trade Fair here. Woven fabrics and knit goods made of these synthetic fibers, particularly of blends of acrylic and polyester fibers with wool, rayon and cotton, were outstanding in the textile section. The variety of products shown tends to exaggerate the small quantity of fiber available now, either manufactured locally in pilot plants or imported from the licensors in America and Britain. However, this exploratory work will pay dividends when the fibers are available in larger quantities, and marketing channels will have already been laid out.

The trade fair showed, too, that Japanese machinery manufacturers are alertly up-to-date in design and manufacture of special dyeing and finishing equipment for man-made fiber fabrics as well as for resin-finishing of cottons and rayons.

Exports to U.S. on Rising Curve

The Textile Products Export Council estimates that shipments in the current fiscal year will be valued at $1,022,847,000, an increase of 3% over the year just ended. This estimate includes all yarns, fibers, apparel and other secondary textile products. Japan's exports of secondary textile products to the United States last year rose from $91,000,000 to $96,000,000. It is probable that $100,000,000 will be reached this year, but with some difficulty.

Exports of cotton textiles have been holding up better than expected, with shipments of about 331,000,000 yards in the first quarter, compared with 334,000,000 in the first quarter 1957. Exports to the U. S. were well ahead of last year's first quarter. Exporters believe that total shipments will barely hold steady for balance of this year. Prospect for exports to the U.S. are a little better than last year's 80 million yards. However, the fabric quota has been cut 10 million yards (to 103,000,000) and transferred to the secondary products quota.

Minimum Prices for Wool Exports

In an effort to prevent dumping in the U. S. and Canada of Japanese wool goods, the Government has set minimum prices for fabrics shipped to these export markets. Exporters who do not observe these minimum prices will be refused raw wool import benefits by the Ministry of International Trade & Industry. These benefits act as an indirect subsidy for exported finished wool goods. The following are the minimum prices based on 54 to 56 inch goods.

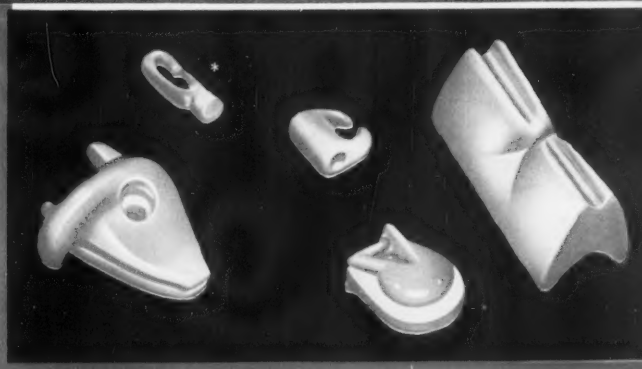
Fabric	Weight in ounces	U.S. price	Canadian price
plain tropical	8	$1.90	$1.80
serge	12	2.45	2.20
worsted flannel	11-12	2.45	2.30
woolen flannel	11-12	1.85	1.75
gabardine	13	2.55	2.40
plain sharkskin	10	2.50	2.35
plain sharkskin	11-12	2.65	2.50
fancy suiting	8	2.22	2.15
fancy suiting	14	3.05	2.90

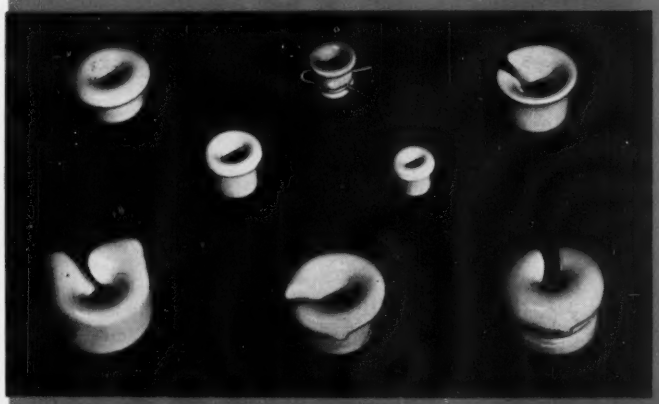
MITI said that Canadian prices were fixed lower than U.S. prices because Japan is interested in developing the Canadian market and thus is providing slightly lower prices. Also the U.S. market requires better quality within a general cloth description and thus U.S. prices must be slightly higher.

MACHINERY and EQUIPMENT SECTION

MITCHELL-BISSELL THREAD GUIDES

For Every Textile Service . . . For More Than 70 Years



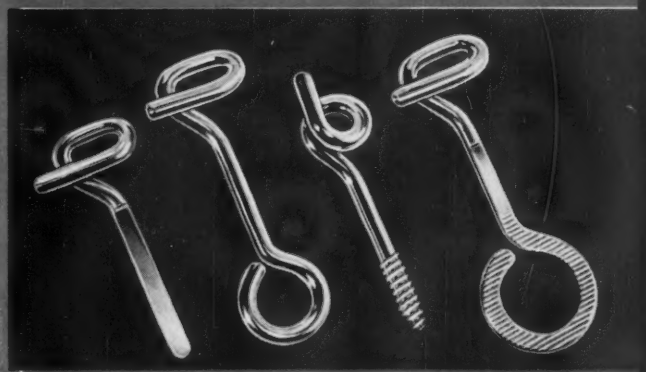


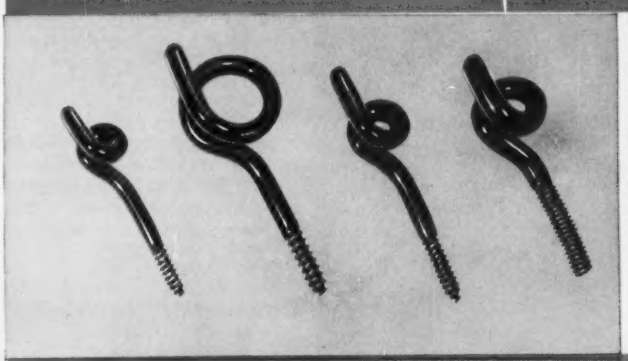
Above—"BLUE SATIN FINISH" PORCELAIN GUIDES.
An exclusive development of Mitchell-Bissell—guides with this finish are more resistant to thread wear than any glazed porcelain guides ever offered the industry. "Blue Satin Finish" Guides, instead of being shiny and glass-like, have a surface of thousands of small rounded grains closely packed together. Reduced wear and longer guide life result because, by breaking the continuity of contact between yarn and guide, friction is reduced. * U. S. Pat. No. 2,152,136.

Left—WHITE GLAZED PORCELAIN GUIDES.
The Mitchell-Bissell Company originated the use of porcelain as a thread guide for the textile industry. The white Glazed Porcelain Guides shown here are representative of thousands of patterns that have been sold to all branches of the textile industry since this company was founded over seventy years ago. Improved in quality from time to time they are still "standard."

Right—CHROMIUM PLATED STEEL GUIDES.
The plating on Mitchell-Bissell Chromium Plated Steel Guides is harder and denser than on any other wire guides. Our methods of fabricating and polishing develop a surface smoothness, with a mirror finish far beyond usual commercial standards. Because of their superior resistance to thread wear these guides are used extensively on machinery for processing rayon and nylon yarns and also for many other severe applications. Also available in Satin Finish.

Below—ENAMELED IRON GUIDES.
Where wire guides are desired, and service conditions do not require chromium-plated guides, our Enameled Iron Guides give exceptionally good service, with a low initial cost. Made with the care and craftsmanship that are standard practice on all Mitchell-Bissell products, these are recommended as centering and ballooning guides, and for cotton, woolen and other soft yarns.



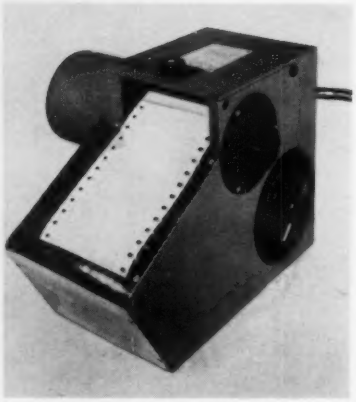


MITCHELL-BISSELL CO.

TRENTON, N. J.

Southern Representative: R. E. L. Holt, Jr., & Associates
Greensboro, N. C.

New MACHINERY
New EQUIPMENT



Automatic Recorder

Lindly & Co., Inc., is now offering a compact, multi-channel instrument for automatically recording data as an invaluable aid in the control of quantity and quality in production processes and experimental work. The data may represent units produced per machine, machine down-time, frequency and duration of occurrence of defects, machine failures, operator time on the job, etc. Two sizes of the Lind-Recorder are available, one with 68 recording channels, the other with 44. *For further information write the editors.*

Speed Indicators

Jones Motrola Corp. has published a booklet, No. 58, on speed indicators. The booklet describes the many jobs on which Jones tachometers, speed indicators and monitors can be used, including improving quality of output, as when applying anti-crease finishes to fabrics or coating electric wire with insulation. *For free copies of the booklet write the editors.*

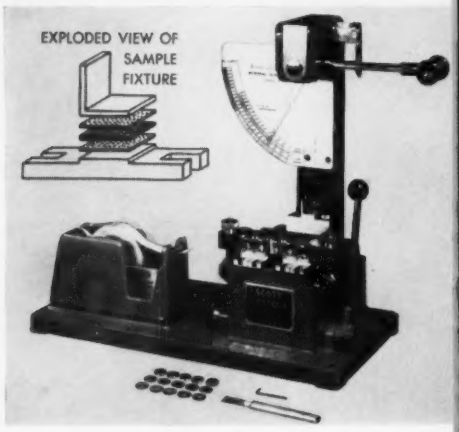
Winder Spindle Locking

Louis P. Batson Co. has announced a new eccentric type locking device for use on all types of winder spindles, straight as well as arbor. The manufacturer reports the device is applicable on other types in use in the textile industry, including wind-up shafts on inspection tables, cloth slitting machines, etc. Installation is claimed to be simple and it is not necessary to overhaul the machines to convert to the locking device. *For further information write the editors.*

Fiberglass Dyehouse Truck

Carl N. Beetle Plastics Corp., a subsidiary of Crompton & Knowles Corp., is now offering through the parent concern a molded fiberglass (Bonate) dyehouse truck reported

to have features not available in earlier models nor in metal or wooden trucks. The truck pipe frame is encased in the same Bonate which comprises the light and durable truck or tank body, thus protecting the metal from corrosive effects of the acids or alkalies used in finishing. The trucks are easy to keep clean since the material is non-absorbent. It has no brazed or welded corners, and may be hosed down. *For further information write the editors.*



Internal Bond Tester

Scott Testers, Inc., reports that its new Model B Internal Bond Tester can split very thin paper or thicknesses of non-woven textiles and other materials up to heavy luggage board and measure the energy required. The new model was first exhibited at a pulp and paper industry testing conference but its application has been extended to other fields, including non-woven textile products. A unique method of multiple specimen preparations saves the time of technicians and assures uniformity. The method of the test is to laminate the specimen on each side to a pulling clamp exactly one square inch. *For further information write the editors.*

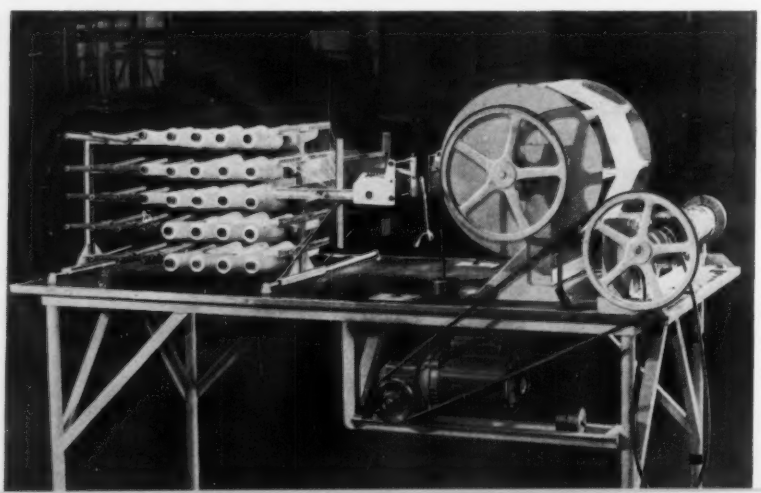
Laboratory Warping Unit

A complete laboratory warping unit has been developed by the Edward J. McBride Co. expressly for use by fabric stylists, weaving mill design departments, textile schools and research plants. The units, with creel, warping reel and beaming attachment, make warp preparation for small hand looms as well as miniature power looms as fast, economical and fully controlled operation, according to McBride.

The unit eliminates tedious time-consuming operations required by hand methods, and at the same time provides more uniform warps.

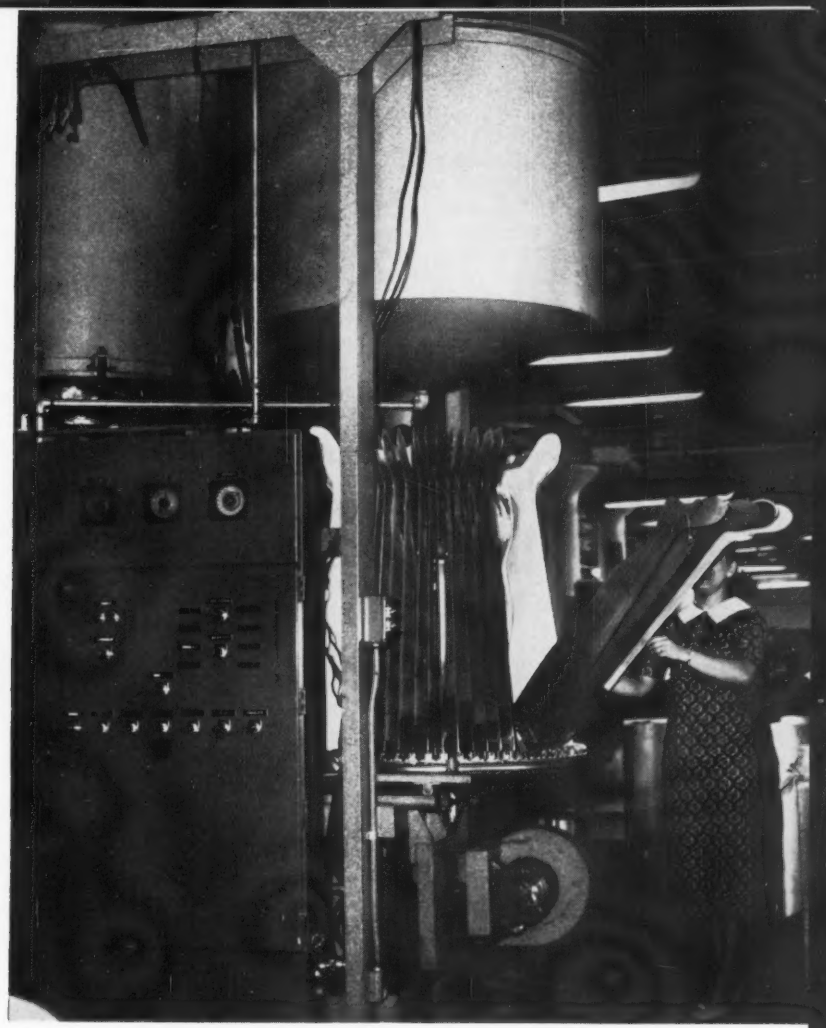
The entire unit is mounted on a platform which can be supplied with or without steel legs. A creel for the unit can be supplied for revolving draw off, or for over end delivery of yarn complete with tensions and stop motion. Universal holders can be provided to permit ready adaptability to virtually any type package.

The revolving draw off creel is movable from side to side to align with sections required for the warp. A movable rack stand is provided for the creel with over end draw. The reel as well as the beaming attachment is power driven and can be plugged into any convenient outlet. *For further information write the editors.*



Laboratory Warping Unit

better, faster hosiery finishing



By the Editors

THE constant and strenuous search of women's nylon hosiery manufacturers for means to reduce costs and boost output of first grade stockings has been greatly aided by the introduction of a new finishing machine. Manufactured by the Turbo Machine Co. of Lansdale, Pa., the new unit, called the "Turbo-Brewin Machine", automatically combines preboarding, dyeing and finish-boarding in one operation, thus eliminating much of the handling that stockings ordinarily receive after leaving the examiner.

Savings in Equipment

Because the machine combines preboarding, dyeing and finish-boarding in one operation, the need for separate dyeing and boarding machinery is eliminated. The dye house itself can be discarded because the Brewin Machine takes care of dyeing in the boarding room. In short, when the new machine is used, the greige stockings go from the examiner to the boarder on the machine and the dyed stockings come off the machine ready for the pairer.

The combination into one of the separate departments of preboarding, boarding and the dyehouse makes possible a substantial saving of floor space. For each Turbo-Brewin Machine the actual floor space required is 78 square feet. Floor space needed for the machine plus greige and finished work tables is estimated at 209 square feet.

Savings in Labor

Dyeing machine operators are eliminated because the boarder is the only person necessary for operating the machine.

Improved Dyeing

Dye formulas can be prepared in concentrated form in advance, and then syphoned into the supply tanks when needed. Accurately measured quantities assure exact duplication from batch to batch and from day to day without additions or changes. Establishment of a formula is comparatively simple. Once established, a shade can be repeated over and over again.

Dyestuffs and resins penetrate into the fiber throughout in the high pressure dyeing process provided by the Brewin Machine. Thus much greater color value, with a deep glow is achieved, instead of surface reflection only.

Improvements in Stocking Quality

With the Brewin Machine, handling of stockings consists only of boarding and stripping by one person. This is in contrast with the handling in unbundling, boarding and stripping in the conventional processes which the Brewin unit replaces. Thus, with the machine, there is a reduction of pulls and more first grade stockings are produced, Also, there is an elimination of the handling connected with preparation of stockings for the dyehouse when, in the conventional

process, they are placed in nets. The Brewin Machine also eliminates damage that may occur in the conventional stocking dyeing machine.

Stockings processed on the Brewin Machine retain considerably more elasticity since the setting is achieved at lower temperatures over a longer period of time without extreme shock to the fiber. The deeper penetration of resins gives the stockings longer wear life.

Use of the Brewin Machine is extremely favorable to finishing seamless hosiery. Best results are obtained if no pre-setting of the stockings is used after knitting, which also amounts to a saving.

How the Brewin Machine Works

The Brewin process is based primarily on a batch principle, with accurate duplication of all conditions from cycle to cycle. This has been achieved by simple, positive measurement of the dye solution, accurate temperature duplication, and, of course, time control.

There are two separate dye systems on the machine, each having a storage tank, a circulating pump which also serves for mild agitation, and a metering tank which can empty its entire content into the base of the pressure vessel at the beginning of each cycle. By means of a single selector switch, the machine will operate from either dye system as desired.

The pressure-vessel part of the machine is a simple cylinder type with upper and lower dished heads. The bell-like top portion raises so that form wheels containing 60 forms may pass freely from either side of the machine to the center, where the bell is lowered hydraulically onto a rim of the form ring. By means of upper and lower gaskets, the form ring will seal effectively. One form ring is stripped and boarded while the other side is being processed, similar to most conventional boarding operations.

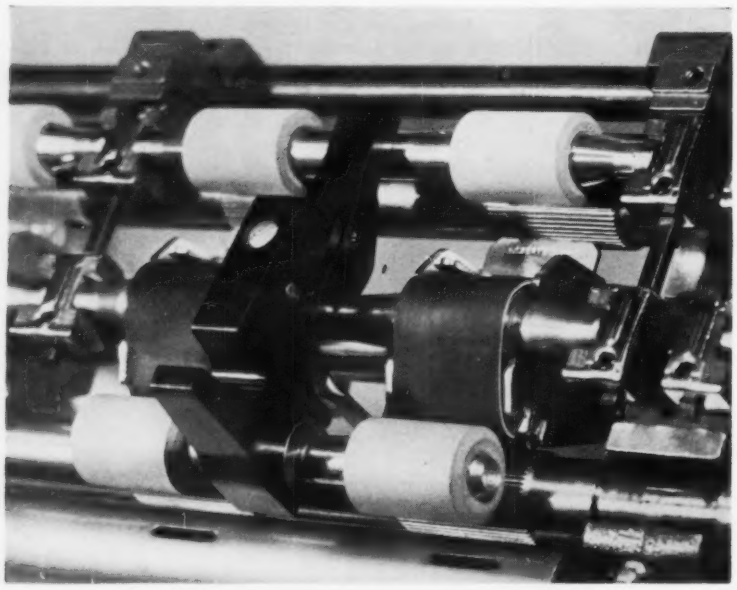
To prepare either dye system for operation, a counter is set for the number of gallons to be used, depending upon the number of dozens to be processed. This counter is connected to a flow meter which will fill the storage tank to the desired number of gallons and then will close the water valve. One flow meter and counter services both dye systems by means of a selector switch. As soon as the water starts to flow into the storage tank a small circulating pump starts, pumping the water through a syphon device then through the metering tank and back into the top of the storage tank.

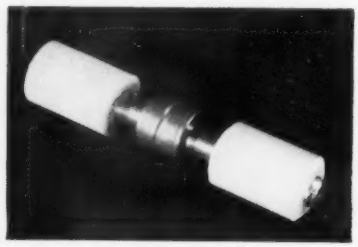
The dye concentrate, containing in compatible form, dispersed dyes, solvent, detergent, lubricant, resin finish and chelating agent in a common portable tank, can be wheeled from the mixing location to the machine and plugged into the syphon device. It will now mix with the water and form the ultimate working solution.

At the beginning of each cycle, circulation is stopped and the metering tank is isolated by means of valves so that it can discharge its volume into the base of the machine. At the same time, the greige stockings move from the boarding position at either end of the machine to a place directly under the bell. The bell then lowers and locks, starting the dye pump.

The dye pump will circulate the dye from the base of the machine, through a heat exchanger to a rotating header extending from the top center of the bell. This spray header has nozzles strategically located so as to give proper distribution of solution. The temperature of the solution is controlled throughout the process cycle of four minutes. The steam used to control the temperature is injected into the heat exchanger and not directly into the vessel. This will avoid dilution or contamination of the solution.

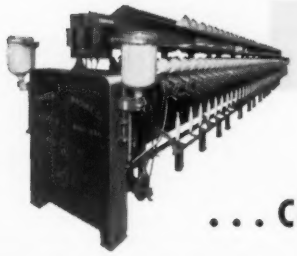
After processing, the pressure is equalized and a blower circulates pre-heated air to dry the hosiery. The length of the entire cycle is approximately 10 minutes. The alternate dye system may be filled at any time and kept in circulation until it is desired to select that system for operation. It, of course, may be an entirely different shade as there is no connection between the two systems. Either system can supply the machine for an eight-hour operation.





Top Roll Suspension

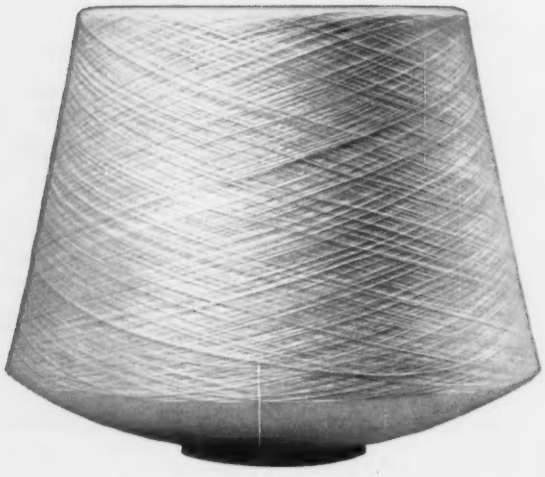
A simplified ball bearing top roll suspension for spinning frames which eliminates cap bars on the front line of rolls and which can become the first step in a complete replacement of cap bars has been announced by Roberts Company. The suspension assembly can be applied to Saco-Lowell Roth and Duo-Roth systems, Whitin Long Draft and Super-Draft systems, in addition to the Roberts High Draft system. All models are fully tooled and are in production. *For further information write the editors.*



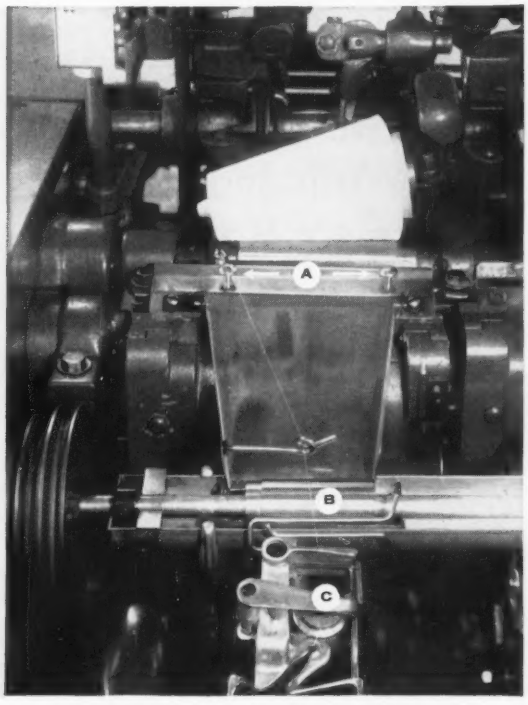
FOSTER MODEL 102-C

For Backwinding Bulk Yarns

. . . Cones that are Kind to Knitting Machines



Cone of Ban-Lon yarn wound on Foster Model 102-C.



Closeup showing mushroom bottoms (A), moistening attachment (B), and tension attachment (C).

The adaptation of the Foster Model 102 for the winding of bulk yarns is one of many examples of this machine's flexibility. The production of cones that are "kind to knitting machines" involves special winding problems. Here's how Foster solves them with the Model 102:

CONE QUALITY is equal to that obtained on the Model 102 with conventional yarns. Increased taper reduces yarn drag and equalizes tension at all cone diameters.

A YARN CONDITIONER (stainless steel) can be supplied with this machine. It applies any kind of emulsion or oil in any degree desired, without sacrificing winding speed — restores normal moisture, gives a soft hand and lubricates the yarn for better knitting.

MUSHROOM PINS, inserted in the thread bars inside of the extremities of the normal traverse (see illustration), prevent overshot and undershot cones.

TENSIONS are made with fine micro-inch finish, hard carboloy inserts, large chrome-plated tension washers and alsimag tension post. They assure snag-free, long life under highly abrasive conditions.

TRAVERSE GUIDES also have carboloy inserts and fine micro-inch finish.

Find out what the Foster Model 102-C Winder will do for YOUR bulk yarns. Ask us to wind some sample cones.

FOSTER MACHINE COMPANY

A Yarn Winder for Every Purpose

Westfield, Massachusetts, U.S.A.

Southern Office — Johnston Bldg., Charlotte, N. C. • *Canadian Representative* — Ross Whitehead & Co. Ltd., 1475 Mountain St., Montreal, Que. and 100 Dixie Plaza, Port Credit, Ontario *European Representative* — Muschamp Textile Machinery Ltd., Keb Lane Bardsley, Oldham, England.

NEW FABRICS

NEW YARNS

Zero Twist Rayon Thread

American Viscose Corp. reports its new "Zero" twist rayon thread is now being successfully used by paper bag manufacturers to ease the sifting problem in sewn multi-wall paper bags. Absence of twist in the new threads is said to permit it to spread after sewing to fill the needle holes and help prevent leakage of bagged materials. The rayon thread is offered in 1100 and 1780 denier sizes; the former thread costs 63 cents a pound and yields 4,058 yards; and the latter costs 58 cents and yields 2,536 yards. *For further information write the editors.*

Wool-Dynel Men's Suits

A new line of wool-Dynel flannel men's suits, said to have "built-in" press and shape retention properties, will be marketed this Fall by The House of Worsted-Tex, Inc. Known as "D-30-SPS" (for "30% Dynel 'self-pressing' suit"), the suits, priced at $65, will be promoted in a special campaign coordinated with the first deliveries to stores. *For further information write the editors.*

Weightless Warmth

Curtiss-Wright Corp. has developed a new foam interlining, Curon, said to combine warmth without weight or bulk. Curon, quilted to nylon taffeta, is said to make rain and car coats truly useful in inclement weather by providing weightless insulation against cold and damp air. Other qualities, reported in laboratory tests conducted by Curtiss-Wright, are: it is odorless, mothproof, washable and dry-cleans without matting. *For further information write the editors.*

Aircraft Carpeting

Cabin Crafts, Inc., has been awarded a contract to install its "McKinley" quality carpet, tufted of 100% Acrilan, in the Beechcraft Aircraft Corp.'s Super 18 and Twin-Bonanza airplanes on a wall-to-wall basis. The two aircraft are twin-engined models. Beechcraft said it selected acrilan carpeting because of its wide variety of colors, wearing qualities and the fact that it does not produce wool lint. The McKinley line also is reported to be moth and mildew proof and to possess low static qualities and good resiliency. *For further information write the editors.*

Wash-n-Wear Trousers

Wash and wear Summer uniform trousers for letter carriers have won the approval of the Post Office Department. The new trousers, which will be sold by Fechheimer Uniform Co., are a lightweight tropical blend of 70% Dacron polyester fiber, 20% Orlon acrylic fiber and 10% mohair. The high man-made fiber content, Du Pont said, permits the trousers to be washed, drip-dried and worn again with little or no pressing. *For further information write the editors.*

Insulated Car Coat

Shelley Knitting Mills has announced it will produce extremely lightweight yet highly serviceable ladies' car coats with "Wunderwear" Dacron Fiberfill insulation for the Fall selling season. The coat, which reportedly can be worn in comfort at below-freezing temperatures, weighs only 16 ounces. The product features a knitted hood with Wunderwear insulating lining. The exterior fabric is made of jacket weight, water-repellent and wind-resistant woven nylon. The coats, priced to sell at retail at about $19.95, are washable in automatic home machines and drip dry in a matter of minutes, according to the manufacturer. *For further information write the editors.*

THE TEXTILE DISTRIBUTORS INSTITUTE, INC.

NEWS AND COMMENT

Revision of Selling Terms Opposed

An appeal to members of the Textile Distributors Institute and to converters and fabric sellers generally to maintain selling terms in the face of continued pressure by retailers for revision was made recently by the Institute. In a bulletin to members dated April 18, Miss Hilda A. Wiedenfeld, TDI Executive Secretary wrote:

"It has been called to our attention that a number of retailers are again asking for selling terms other than the customary terms prevailing in our industry for sales to retailers, namely 2/10/60 or 3/10/E.O.M. It is also reported that some retailers are asking for anticipation at a rate in excess of 6 percent.

"In this connection, we quote below an excerpt of a letter received from one of the leading distributors, which is self-explanatory:

> 'Enclosed is a copy of a letter which we are sending to retailers who have had confirmations of orders printed that call for terms other than our established retail terms of 2/10/60.
>
> 'Some confirmations recently printed call for anticipation at the rate of 7% per annum and, in one instance, 8% per annum. Other confirmations call for terms of 3% 10 days which, in actual practice, does not work out quite the same as terms of 2/10/60. Other confirmations call for the bill to start maturing on arrival of merchandise in the store.
>
> 'We have found it necessary to set up a special accounting section to screen these retail confirmations and write letters to the buyers and comptrollers of the stores in an effort to avoid any broadening of the situation.'

"We are enclosing a copy of the form of letter which is being used by this distributor in writing to retailers where the selling terms or anticipation rate are different from the distributor's established terms. This form of letter may serve as a guide to you in writing to your own accounts.

"We are certain that our members are maintaining their existing terms and you should not be pressured into taking any different action on the basis of rumors to the contrary which are usually unfounded. The services of the Institute are available to any member to investigate any rumors which you may hear to the contrary."

Suggested Form Letter

"Gentlemen:

"The confirmation of order described above does not agree with our standard terms. In order to avoid delay, shipment will be made on our standard terms which are 2/10/60 (2%discount if paid 70 days from date of our invoice). In addition, anticipation will be allowed at the rate of 6% per annum from the date of actual payment to the due date (70 days from date of our invoice). Invoices may not be redated for anticipation purposes.

"Our invoice date is the date the merchandise is delivered to the common carrier when title passes to you.

"Will you please instruct your Accounts Payable Department accordingly since deductions for anticipation or discount which do not conform will be disallowed with resulting inconvenience to both your accounting staff and ours."

"Yours very truly
Signature"

TDI Viewpoint on Labeling Bill

In support of the position of the Joint Committee on Labeling of Textiles and Apparel, the Textile Distributors Institute on April 21, sent the following letter to Senator Warren G. Magnuson, chairman of the Senate Committee on Foreign and Interstate Commerce. On behalf of TDI the letter was signed by Miss Hilda A. Wiedenfeld, Executive Secretary.

"Dear Mr. Magnuson:

"This association, which represents firms engaged in the business of converting and distributing textile fabrics made primarily of man-made fibers, testified before your Committee in opposition to H.R. 469, which Bill would require the labeling of textile fiber products to show the percentage content of each constituent fiber.

"Mr. Richard Deneau appeared personally before your Committee and submitted a written statement on behalf of the Institute. His testimony was given late in the afternoon of the last day of the hearings with only one member of the Committee, namely Senator Potter, present due to the fact that the presence of the other members of the Committee was required on the Senate floor. Due to these circumstances there was no opportunity to discuss at length a number of questions which might have been invoked from the points made in his statement. Furthermore, since the conclusion of the hearings, a number of meetings were held among interested groups in which this association participated. These meetings indicated that with the exception of the cotton growers group and the Du Pont Co., there was vehement and unanimous opposition to this legislation in its present form.

"The Joint Industry Committee has submitted to your Committee several suggested amendments to the present Bill. We are generally in agreement with the suggested amendments which we feel will serve to make this legislation more realistic and cure certain basic defects in the present Bill. However, we feel that there is still not a clear understanding of the reasons why this association and the other industry groups are opposed to this legislation and we, therefore, feel compelled to express our views on this subject in the hope that it may serve to clarify the reason and justification for our position.

"At the outset, the proponents of this legislation have attempted to dramatize the fact that this type of labeling is necessary in order to protect the consumer and eliminate the possibility of deception. It seems curious indeed that only the cotton growers group and the Du Pont Co., which is a manufacturer of fibers, both of which are far removed in the channels of trade from the manufacture of textile fabrics and finished garments in the form for ultimate sale to consumers, should assume this responsibility. If the posture taken by these groups should be assumed to be correct, then it must be assumed that the textile fabric manufacturers, both of cotton and man-made fibers, who are opposing this legislation, are interested in preserving the opportunity to practice deception upon the consumer.

"We submit that the very statement of this proposition should clearly indicate that it is not valid. Certainly, the great textile mills of this country, which are unanimously opposed to a requirement for percentage fiber labeling, are ethical and responsible firms and carry out their responsibility to the consumer just as seriously as would the cotton growers and the Du Pont Co. We submit that the position taken by these textile mills that this legislation not alone is unnecessary to prevent deception but may, in fact, result in confusion and deception which do not presently exist should, therefore, be given serious consideration by this Committee.

"Why then have the cotton growers and the Du Pont Co. supported this legislation? During the course of the hearings, members of the Committee made the point that even if the consumer may not be able to interpret properly the significance of the fiber percentages in relation to the performance of the fabric, would it not be better that they have this additional information? To answer these questions, it might be noted that the texile mills are engaged in the manufacture of fabrics rather than a combination of fibers. The success of their business depends upon the performance and acceptability of their fabrics.

"Most textile products at the present time will show a brand name or other identification of a manufacturer with respect to the particular textile fabric. If the consumer becomes dissatisfied with a particular fabric, she will avoid purchasing it in the future.

"Under percentage fiber labeling, the consumer might be inclined to purchase a particular fabric based upon a slightly larger percentage of a particular fiber in one product over another. The additional amount of this fiber in a particular fabric might have no significance whatsoever in improving its performance or quality. However, a well calculated promotional campaign on the part of the fiber producer along the lines of miracle fibers would give to the consumer the impression that the fabric containing the larger percentage of this fiber is superior.

"We believe this point is well illustrated by the position of the Du Pont Co. This type of legislation would unquestionably increase their aggressive promotional campaign of their special fibers such as Dacron, that the performance of a fabric is improved as the Dacron content approaches 100%. This type of atmosphere which would be generated would seriously interfere with and impede research and development by textile mills to produce fabrics of varying fiber content for particular end-uses.

"The point is also to be made that the desirability of this type of legislation is supported by the experience under the Wool Products Labeling Act. As we pointed out at pages 7 through 9 in the statement of Mr. Deneau, the situations are neither comparable nor analogous. Whereas the fiber itself to a larger degree imparts the particular characteristics of a wool fabric than in the case of cotton and synthetic fabrics, fibers are of lesser significance and the characteristics of the final fabric are to a large degree controlled by the processing and finishing which are applied. Furthermore, the burden of labeling and record keeping would be far greater in the case of cotton and synthetic fibers because of the mixture of many fibers than in the case of wool fabrics where the majority of woolen fabrics are still comprised of 100% wool.

"We wish at this time to endorse the position taken by the Joint Industry Committee to the extent that if labeling legislation is found to be necessary, the only workable and informative method so far as manufacturer and consumer are concerned would be to require disclosure of fiber content in the order of predominance by weight without disclosure of percentages."

Outstanding TDI Show Promised

For presentation at the annual golf tournament of the Textile Distributors Institute, June 11 to 13 at the Shawnee Inn, Shawnee-on-Delaware, Pa., the annual musical show is reported in the final stages of rehearsal. The show, a tradition at the golf tournament, is written and staged by TDI members.

According to advance reports, this year's entertainment promises to be livelier, funnier and better rehearsed and organized than any previous performance. The show, in the form of a musical comedy, will be enriched by comic songs, skits and jokes lampooning the current state of the textile industry.

It will be produced by Edgar Schlesinger of United Merchants & Manufacturers in collaboration with his brother, Bud Schlesinger of Chemstrand Corp. Book and incidental lyrics have been written by Bud Schlesinger, Joe Carvin and Bruce Roberts of Eastman Chemical Products, Inc., along with Standish Holmes of American Enka Corp., Lon Nave of American Bemberg and others. A large cast will participate.

New TDI Member

Walter Ross, president, Textile Distributors Institute, announced recently that New England Textile Co., Inc., 379 Broadway, New York 13, N. Y., has been elected to membership in the Institute. The firm, of which Jack Litwack is president, is a distributor of men's wear, plain spun, plied yarn and special fabrics. It also handles export business.

Latex Backing (Continued from Page 59)

of floor coverings. The extra layer adds to the insulation between the noise and the floor which in nearly every home, serves as a "sounding board". Vibration is reduced and comfort is thus increased.

In this connection it should be mentioned that the tufted carpet industry is now one of the major consumers of latex.

Tufting has brought us to the point where, today, *more than 50%* of all carpet yardage produced is made on tufting looms. This has been in part the result of latex coatings. This industry is completely dependent on latex as an integral part of the carpet.

PAPERS OF THE
AMERICAN ASSOCIATION FOR
TEXTILE TECHNOLOGY INC.®

AATT

some advantages of

cotton-rayon 80x80 printcloth

By G. V. Lund

THE MERITS claimed for cotton/rayon blends by various workers are many and varied and do not apply to all fabrics and end-uses, but in general they can be summarized as follows:

1. More economical: the savings obtained vary greatly with the grade of cotton necessary for the particular end-use and with the point at which blending occurs. In greige goods where blending is done at the drawing frame, cotton/rayon blends are generally concluded to be more economical because of the lower raw material cost and lower waste made by rayon. However, this price advantage may be reduced in the finished goods because of special handling required and higher shrinkages experienced.
2. More uniform yarns: rayon spins into a more uniform yarn than cotton, and blends are usually intermediate between the two in regularity.
3. More lustrous yarns and fabrics: the greater luster of the fabrics is caused by the greater luster of the rayon staple and the more regular yarns produced. Blend fabrics can approach mercerized cotton fabrics in this respect, but in many cases mercerizing is still desirable for fabric stabilization and for premium fabrics.
4. Improved dyeability: brighter colors and often better color fastness are obtained on both printed and dyed fabrics.
5. Improved hand and drape: these are given by the inherent softness and better draping characteristics of rayon.
6. Whiter goods: whiter goods can be obtained with less severe kier boiling and bleaching than with all-cotton.

The above advantages are substantial, but recently another factor has become important. During the past few years, the amount of all-cotton fabric which has been resin-treated for crease resistance, drip-dry and wash-and-wear properties has increased markedly. Cotton, however, is not a particularly good fiber for this purpose. It is highly crystalline and is, therefore,

The authors of the following papers wish to point out that they are progress reports on experimental work done on 80 x 80 print cloth fabrics containing varying percentages of cotton and rayon. The data gathered in these experimental studies and the conclusions drawn from such data by the authors are not intended to be understood as applicable to fabrics of other constructions.

The work done in these experiments here reported and the data thus gathered is offered more as a guide to mills in their own fabric development work rather than as a text to be followed literally for commercial production of cotton-rayon 80 x 80 cloths or any other fabrics made of cotton-rayon blends.

It is expected that the experimental work reported here will be continued and should in time lead to additional data useful to mills interested in the possibilities of cotton-rayon blends in standard high-volume constructions. As additional information of value is developed, it will be published in MTM.

THE EDITORS

Mr. Lund is manager of the textile research, development and technical service, Courtaulds (Alabama) Inc., Mobile, Ala. A graduate of Leeds University, and an associate of the Textile Institute, he was with James Kenyon & Son Ltd., before joining Courtaulds, Ltd. at Rochdale, England in 1950.

G. V. Lund

easily damaged by acid catalysts, easily embrittled by resins, and easily tendered by chlorine washes due to the liberation of free hydrochloric acid from chlorine retentive resins after ironing.

Rayon is, of course, a cellulosic fiber just as is cotton, but it is a more amorphous fiber. It is not so easily embrittled by resins and, because of its greater tolerance to small concentrations of acid, is less likely to be tendered by catalysts and by hydrochloric acid evolved by chlorine retentive resins during ironing after washing with chlorine present.

These considerations led us to think that the addition of rayon to cotton in fabrics to be resin-treated would make better fabrics possible. Accordingly, a cooperative experimental program of resin-treatment of blends of cotton and rayon in an 80 x 80 printcloth was organized. This was carried out jointly by the Textile Chemicals Department of the American Cyanamid Co. and the Textile Research and Development Department of Courtaulds (Alabama) Inc., and the main part of this paper consists of a report on the findings of this investigation.

PART I—PROPERTIES OF YARNS, DESIZED AND PREPARED FABRICS

Experimental Method

An experiment was designed on statistical grounds to investigate the relationship between the percentage of rayon in blends with cotton and a number of physical and physico-chemical properties of yarns and fabrics produced from the blends. An 80 x 80 printcloth construction was chosen for this trial, and the blend percentages and yarn twists used are given below in Table I.

TABLE I

	Blend	Twist Multiplier	
(a)	100% Cotton	Warp	4.50 Z
		Filling	3.90 Z
(b)	85.4% Cotton/14.6% "Fibro"	Warp	4.50 Z
		Filling	3.90 Z
(c)	50% Cotton/50% "Fibro"	Warp	4.25 Z
		Filling	3.90 Z
(d)	14.6% Cotton/85.4% "Fibro"	Warp	4.00 Z
		Filling	3.50 Z
(e)	100% Rayon	Warp	4.00 Z
		Filling	3.50 Z

The blends were all made from the same lot of American Upland 1-⅛" Middling cotton. The rayon staple used was one lot of 1-½ denier 1-⅛" Bright "Fibro". Blending was done at the picker; 30s warp and 40s filling yarns were spun as detailed above, and twist multipliers were chosen to give the best processing for each blend.

The methods of preparation were also altered for the blends containing less than 50% cotton. The fabrics containing 50% or more of cotton were treated in the following manner:

(1) Singed.
(2) Enzyme desized.
(3) Scoured with extra sodium pyrophosphate and detergent at 160°F. for twenty minutes.
(4) Treated with caustic soda and soda ash (3 grams per liter of each) at 170°F., raised to 190-195°F., and run for two hours. This treatment was done to clean the cotton instead of kier boiling.

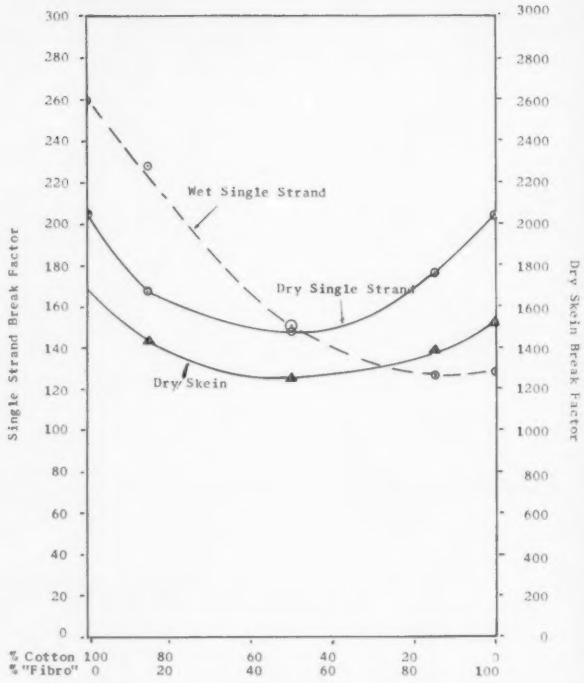


Figure 1
The Effect of Blending Cotton and Rayon Upon the Strength of 40/1 Yarn

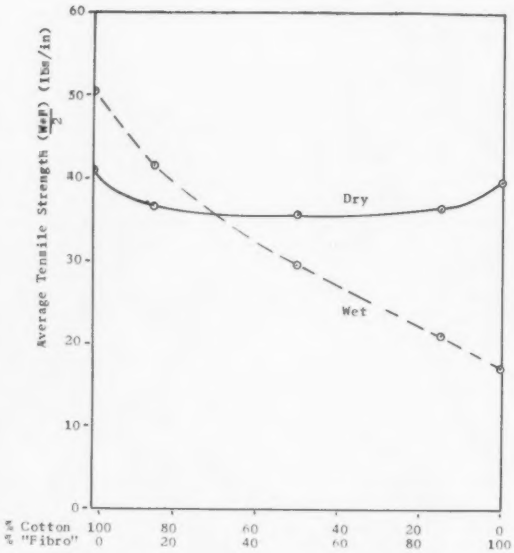
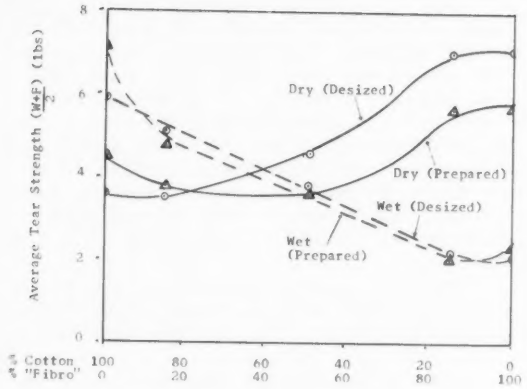


Figure 2
The Effect of Blending Cotton and Rayon Upon Fabric Tensile Strength (After Preparation for Resin Treatment)

(5) pH adjusted to approximately 11 with sodium bicarbonate.
(6) Hypochlorite bleached (0.3% available chlorine) for one hour at ambient temperature.
(7) Anti-chlor treatment with sodium bisulphite. (1%, 20 minutes cold).
(8) Scoured in detergent at 160°F. for twenty minutes, extracted and frame-dried.

The caustic and soda ash treatment was omitted on the 14.6% cotton and all-rayon fabrics.



*Trapezoid

Figure 3

The Effect of Blending Cotton and Rayon Upon Fabric Tear Strength*
(After Desizing and After Preparation for Resin Treatment)

Results and Discussion

As can be seen from Figure 1, the dry strengths of the yarns from the blend samples are lower than the yarns spun from the components alone. This is not new knowledge, and these results merely confirm what has been said many times previously. The wet strengths of the yarns also decrease as the amount of rayon is increased, but with up to about 40% rayon the wet strengths are higher than the dry strengths.

Figure 2 shows that the loss of strength in fabric form is by no means as marked as it is in yarn form. The reason for this is obscure since in general fabric properties do follow the pattern of yarn properties, other things being equal. However, blends of cotton and rayon should be spun with lower twist than yarns of 100% cotton, and it is well known that changes in twist can have a marked effect on fabric strength.

Figure 3 shows that dry tear strength increases and wet tear strength decreases as the amount of rayon in the blend is increased.

Figure 4 shows the resistance to flex abrasion of the fabrics as measured on the Universal Wear Tester (Stoll, 3-pounds back tension, 1-pound front pressure). The resistance to abrasion of the desized fabric decreases markedly with the addition of rayon. However, after bleaching and with consequent removal of the lubricating cotton waxes, the resistance to abrasion of the predominantly cotton fabrics is reduced markedly. It is, therefore, seen in this fabric construction that after bleaching the addition of rayon to the blend has little effect on the resistance to flex abrasion of the dry fabrics. Increased amounts of rayon do, however, give lower resistance to wet abrasion.

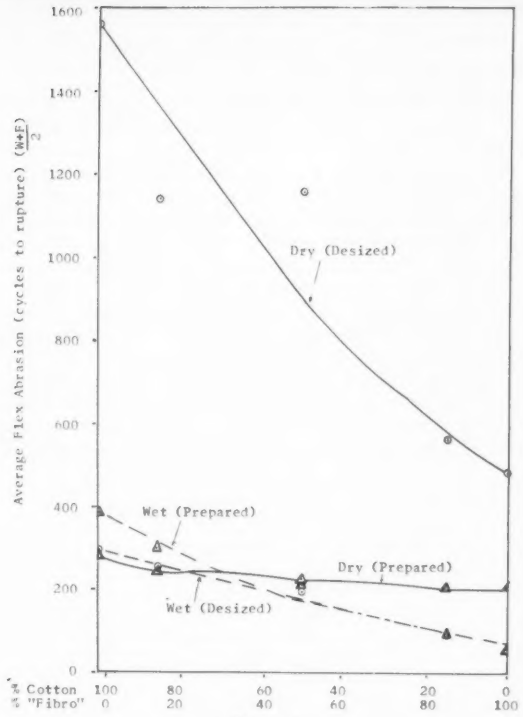


Figure 4

The Effect of Blending Cotton and Rayon Upon Fabric Flex Abrasion Resistance
(After Desizing and After Preparation for Resin Treatment)

After having established the effect of blending rayon with cotton on the properties of cotton before resin-treatment, we proceeded with the second part of the experiment.

PART II—THE PROPERTIES OF RESIN-TREATED FABRICS

Experimental Method

All the blends were treated with a number of different resin concentrations of Aerotex Resin EU and Aerotex Resin MW. No hand-builders or softeners were used in the formulations since we wanted to get the effect of the resin alone. Some readers may think that the curves we are producing are remarkably good. This is because this experiment was statistically designed and the curves are calculated ones. However, we have confidence in their reliability.

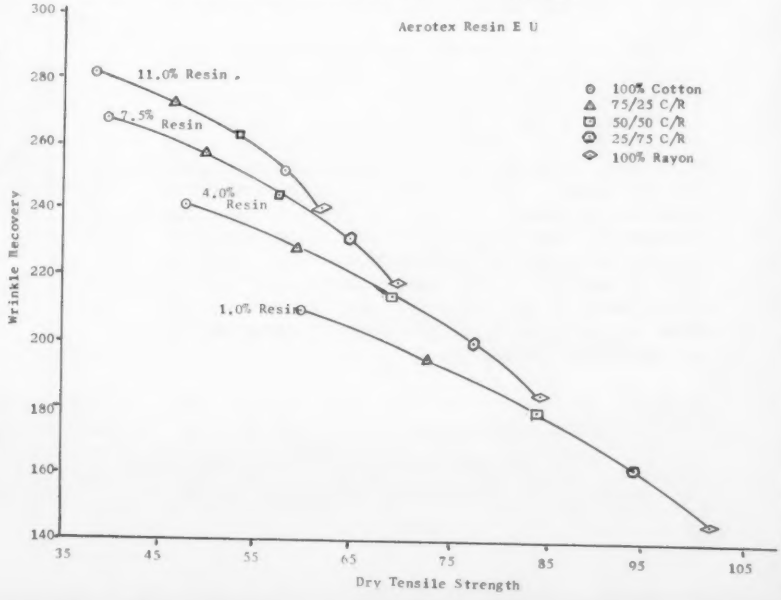


Figure 5

The Relationship Between Fabric Wrinkle Recovery and Dry Tensile Strength For Cotton/Rayon Blends at Various Resin Content Levels

Results and Discussion

Since tensile strength is normally reduced as wrinkle recovery is improved by resin-treatment, we have plotted in Figure 5 wrinkle recovery against dry tensile strength for Aerotex Resin EU. Each curve represents a specific amount of resin, and each point represents a specific fiber or blend. The points on the left side are 100% cotton, those on the right side 100% rayon, and the intermediate ones are blends. It will be seen that at each concentration of resin, increasing amounts of rayon results in lower crease recovery and higher tensile strength. This relationship is true for all the resin concentrations.

Taking a point for 100% cotton and 5% Aerotex Resin EU as a typical resin-finished 80 x 80 printcloth, we see that to obtain a similar wrinkle recovery angle on a 75/25 cotton/rayon blend, we should use 7.5% of the resin. According to this work, we should then obtain a stronger fabric at the same wrinkle recovery angle.

Figure 6 shows that the same relationships were obtained for Aerotex Resin MW, but at a lower wrinkle recovery angle for each concentration of resin.

In Figure 7, the relationship between *dry* wrinkle recovery and *wet* tensile strength with Aerotex Resin EU is seen. As shown before, at each resin concentration the wrinkle recovery decreases as the amount of rayon in the blend increases. In the wet state, the strength does not increase markedly as the amount of rayon is increased, but neither does it drop. This is in marked contrast to the results shown in Figure 2 which revealed that on unresinated fabrics the addition of rayon to the blend markedly decreases the wet strength of the fabric.

Taking our previous reference point of a 100% cotton fabric with 5% resin solids, a fabric of similar wrinkle recovery properties made from a blend of 75% cotton/25% rayon with 7.5% resin solids will have only very slightly lower wet tensile strength.

It is shown in Figure 8 that at the same concentration of Aerotex Resin EU, the blends have a slightly higher percentage water imbibition than the all-cotton fabrics. By percentage water inbibition, we mean the percentage weight of water retained in the fabric after wetting and hydro-extracting at 1000 g for 5 minutes.

In Table II we have gathered together the information presented in the preceding graphs, so that the physical properties of fabrics of similar crease recovery angle may be compared. It will be seen that, according to these results, to obtain a wrinkle re-

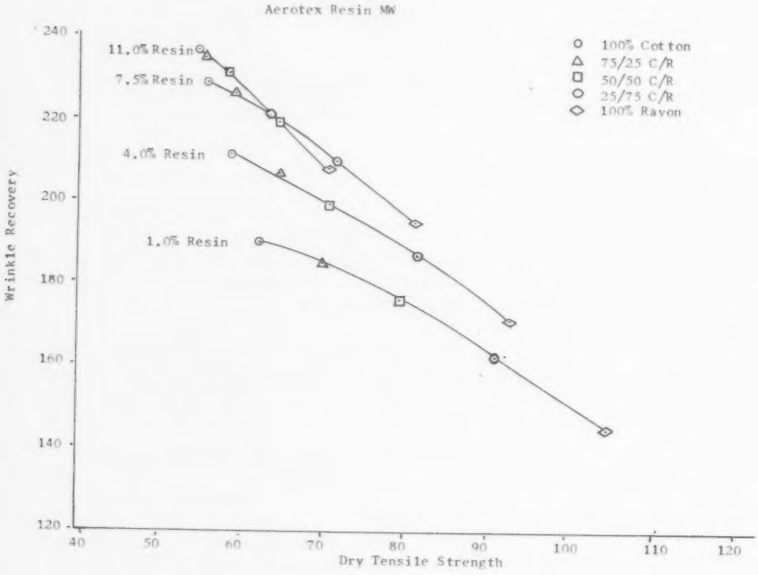


Figure 6
The Relationship Between Fabric Wrinkle Recovery and Dry Tensile Strength For Cotton/Rayon Blends at Various Resin Content Levels

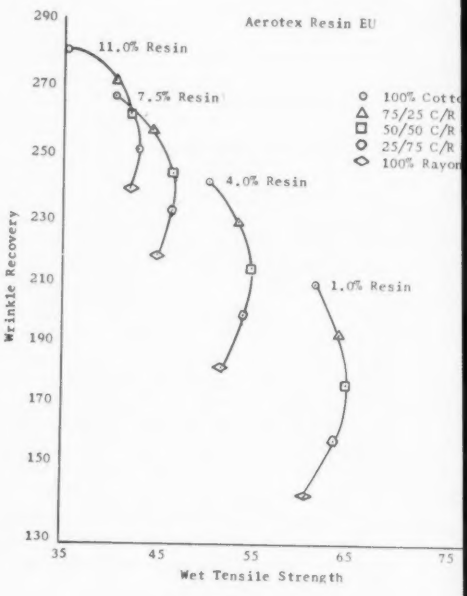


Figure 7
The Relationship Between Fabric Wrinkle Recovery and Wet Tensile Strength For Cotton/Rayon Blends at Various Resin Content Levels

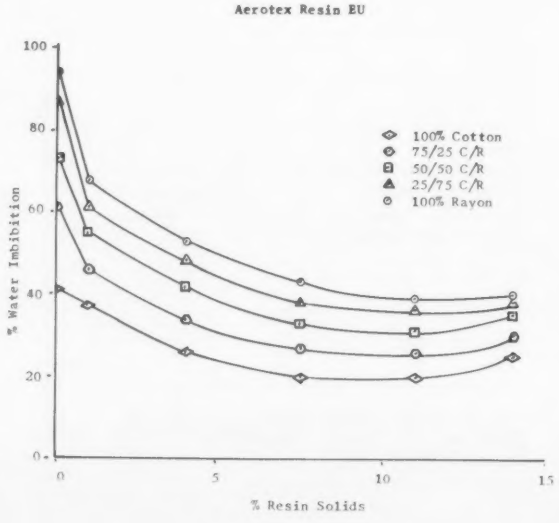


Figure 8
The Effect of Resin Concentration Upon Fabric Water Imbibition of Cotton/Rayon Blends

Table II. Comparison of Resin Content, Tensile, Tear, Swelling and Drip-Dry Appearance Properties of Fabrics at Similar Wrinkle Recovery Levels (Aerotex Resin E U)

Wrinkle Recovery	% Resin	Dry Tensile Strength (lbs.)	Wet Tensile Strength (lbs.)	Dry Tear Strength (lbs.)	Wet Tear Strength (lbs.)	% Water Imbibition	Appearance Rating After 9 Launderings*
1. 240°							
a. 100% Cotton	3.75	48.5	51.0	1.48	1.7	27	3.80
b. 75/25 C/R	5.25	54.5	49.6	2.10	1.6	30	4.10
c. 50/50 C/R	6.75	59.6	48.0	2.44	1.5	34	3.90
d. 25/75 C/R	8.75	61.8	44.8	2.40	1.5	36	3.45
e. 100% Rayon	11.00	61.2	41.6	2.10	1.6	39	2.70
2. 250°							
a. 100% Cotton	5.00	44.0	47.3	1.32	1.6	23	4.25
b. 75/25 C/R	6.50	51.3	46.5	1.90	1.5	27	4.40
c. 50/50 C/R	8.50	55.7	44.8	2.20	1.4	31	4.15
d. 25/75 C/R	10.75	58.0	43.0	2.20	1.4	36	3.55
e. 100% Rayon	—	—	—	—	—	—	—
3. 260°							
a. 100% Cotton	6.25	41.3	43.7	1.20	1.5	21	4.63
b. 75/25 C/R	8.00	49.0	43.6	1.80	1.4	26	4.70
c. 50/50 C/R	10.50	52.8	42.4	2.10	1.3	30	4.30
d. 25/75 C/R	—	—	—	—	—	—	—
e. 100% Rayon	—	—	—	—	—	—	—
4. 270°							
a. 100% Cotton	8.00	39.2	39.7	1.20	1.4	20	5.00
b. 75/25 C/R	10.50	46.7	40.6	1.70	1.3	26	4.80
c. 50/50 C/R	—	—	—	—	—	—	—
d. 25/75 C/R	—	—	—	—	—	—	—
e. 100% Rayon	—	—	—	—	—	—	—

* 1 = Poorest.
5 = Best (Almost no wrinkles).

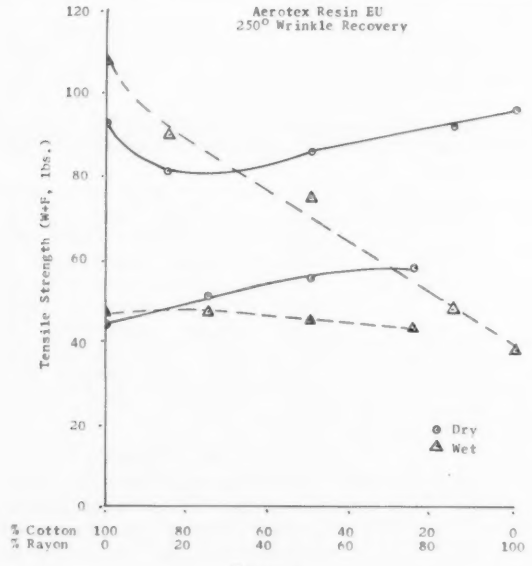


Figure 9

Comparison of Grab Tensile Properties of Untreated and Resin-Treated Fabrics at a Similar Wrinkle Recovery Level

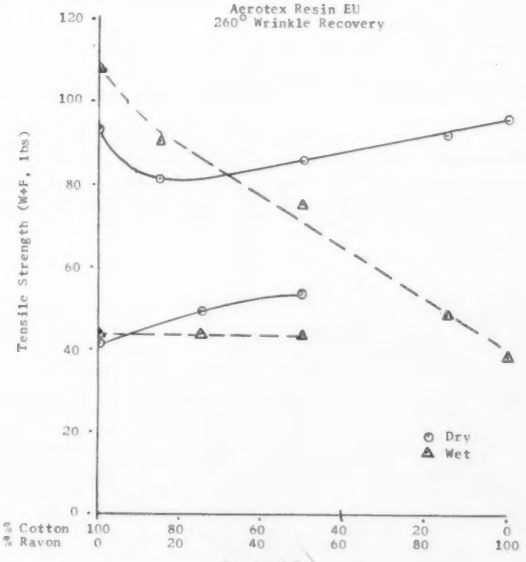


Figure 10

Comparison of Grab Tensile Properties of Untreated and Resin-Treated Fabrics at a Similar Wrinkle Recovery Level

covery angle of 250° in a blend of 75% cotton/25% rayon, 6.5% Aerotex EU should be used instead of the 5.0% used on the all-cotton fabric. The blend fabric would then be expected to have better dry tensile and tear strengths, slightly higher water imbibition, and very slightly lower wet tensile and tear strengths. This general relationship should also be true at higher levels of crease recovery.

In Figures 9, 10 and 11, we have plotted blend composition against tensile strength, wet and dry. It is

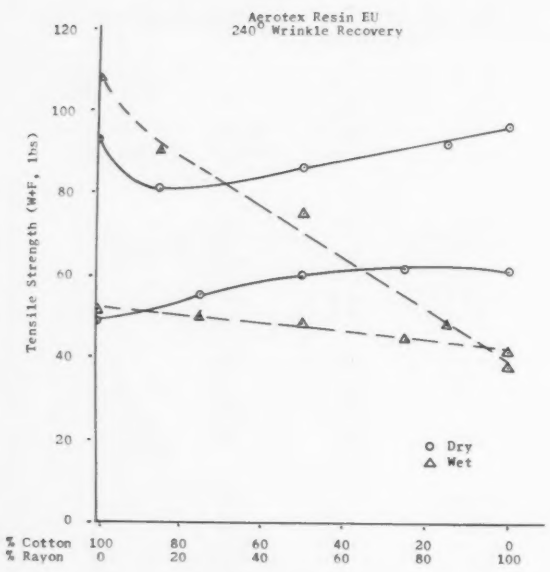


Figure 11
Comparison of Grab Tensile Properties of Untreated and Resin-Treated Fabrics at a Similar Wrinkle Recovery Level

immediately apparent on all of these Figures that the slight loss in tensile strength on addition of rayon before resin-treatment has been turned into a gain after resin-treatment. This is most probably due to the fact that the resin-treatment weakens the rayon component less than the cotton. Possibly there is also a secondary effect in that the resin-treatment has brought the breaking extensibilities of the two fibers closer together.

From the previous data, it appears that incorporating rayon in the blend enables fabrics of similar crease resistance to be obtained with substantially higher dry strength. However, since high crease recovery angles are often required in the hope of obtaining good drip-dry or easy-care properties, it is important to know whether or not the addition of rayon to the blend will upset this relationship in any way. In Figure 12, drip-dry appearance after nine launderings is plotted against wrinkle recovery for Aerotex EU. It is clear that there is a high degree of correlation between wrinkle recovery angle and drip-dry appearance, and it is also clear that with Aerotex EU the inclusion of up to 50% rayon in the blend tends very slightly to increase the drip-dry rating of the fabric at a given crease recovery angle. However, this is a very small effect.

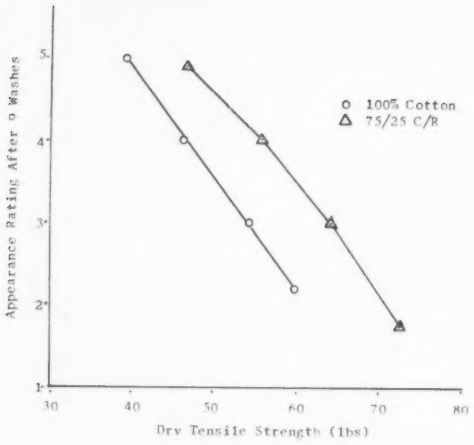
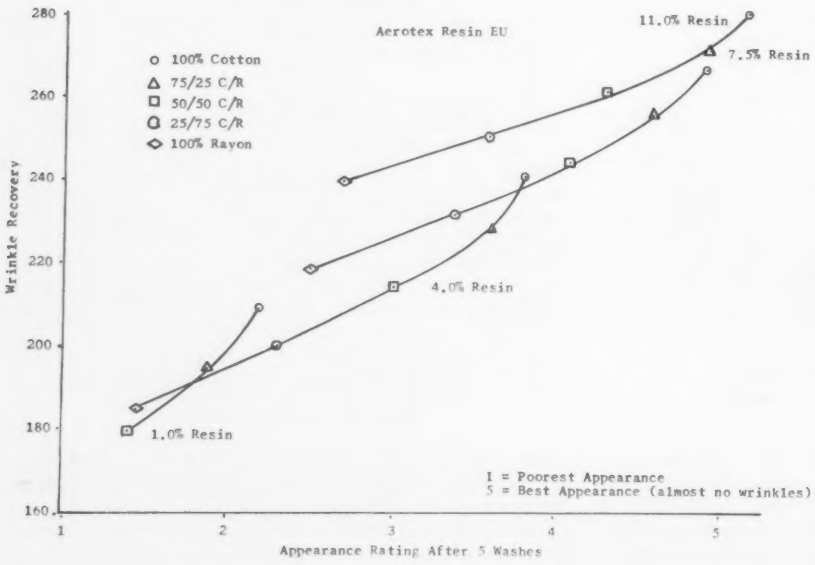


Figure 13
Comparison of Dry Tensile Strength of 100% Cotton and 75/25 Cotton/Rayon Fabrics at Similar Drip-Dry Rating (Aerotex Resin EU)

The next question to be answered, therefore, is what are the relative tensile properties of the 100% cotton fabrics and the blends at a given drip-dry rating. In Figures 13, it is clear that the addition of 25% rayon to the blend makes a substantial increase in dry tensile strength possible at all levels of drip-dry behavior.

Figure 12
The Relationship Between Dry Wrinkle Recovery and Drip-Dry Appearance After Nine Washes for Cotton/Rayon Blends at Various Resin Content Levels



All the previous data have been concerned with fabrics after resin-treatment and one after-wash, but Figure 14 shows the relationship between wrinkle recovery and tensile strength after sixteen launderings at 140°F., and it is clear that the blends have not suffered any more than the 100% cotton fabrics.

CONCLUSIONS

Previous work by many mills has shown cotton/rayon blends to offer the following advantages over 100% cotton fabrics: some cost savings; more regular

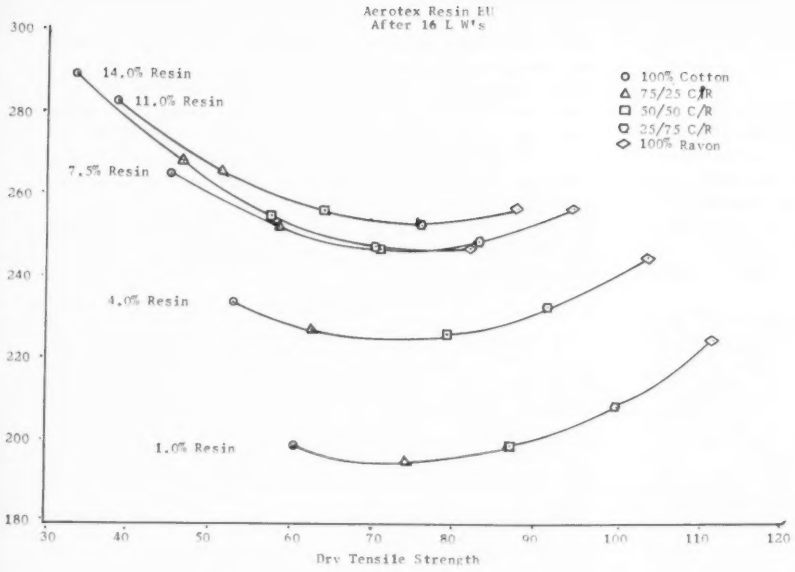


Figure 14

The Relationship Between Fabric Wrinkle Recovery and Tensile Strength of Resin-Treated Cotton/Rayon Blends After Laundering

yarns; cleaner yarns and fabrics; improved dye affinity with resultant brighter colors; clearer prints and improved color fastness in many cases; kinder hand and improved draping characteristics; and white goods with less kier boiling and bleaching. Although these advantages are of considerable importance, they are offset in many cases by lower tensile strength (dry and wet) and greater shrinkage in pure-finished goods.

Recently, the amount of staple cotton fabrics being resin-finished has increased enormously; however, it is generally agreed that resin-treated cottons have two serious problems, namely low physical properties and varying degrees of chlorine retention damage.

Since it is known that 100% rayon fabrics have better retention of physical properties after resin-treatment due to rayon's more amorphous nature, it was logical to think that cotton/rayon blends might offer improved physical properties over 100% cotton in resin-finished goods.

The results of this trial have conclusively indicated blend fabrics containing up to 25 or 35% rayon to show a marked improvement in dry tensile and tear strength properties over 100% cotton fabrics at a similar wrinkle recovery level and to have similar wet tensile and tear strength properties.

It has been shown independently of these studies that for a given resin, rayon, and blends of cotton and rayon suffer considerably less chlorine retention damage than does cotton alone. It, therefore, appears that cotton/rayon blends have much to offer to both the grey mill and the finisher and converter of resin-treated goods who have to achieve a high level of crease recovery while retaining good tensile strength and a low degree of chlorine retention damage.

bleaching and mercerizing cotton-rayon 80 x 80 cloth

By T. R. Scott, Jr.

THE IDEA of using rayon in blends with cotton is not new, and a certain amount of information has been published on this subject. Much of this work originated in Europe, where it was recognized very early that rayon in blends with cotton produces a smooth, lustrous, clean fabric at lower cost.

Heukers[1] reported that men's underwear knit from yarn containing two-thirds cotton and one-third rayon has greater aesthetic appeal and gives superior wear life in comparison with garments made from all-cotton yarns. This increased performance of the blend has been attributed to greater resistance of rayon to damage due to perspiration.

Results of an investigation by Boyd, Butterworth and Tattersfield[2] showed that yarns spun from a blend of two-thirds cotton and one-third rayon are more even and that denim and twill fabrics woven from these yarns have an improved and lustrous appearance and cost less to process. A wide range of garment serviceability trials involving severe laundering and

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T. R. Scott, Jr.

exposure to abrasive wear showed that the blend fabrics performed at least equally as well as corresponding all-cotton garments.

In addition, recent work in this country on resin finishes to produce minimum care fabrics has demonstrated certain inherent advantages in rayon fiber, particularly less loss in tensile and tear strengths due to resin treatment and less damage due to retained chlorine. With this development, it seems reasonable that attempts would be made to use blends of cotton and rayon in an effort to utilize to the fullest extent the inherent advantages of each fiber.

It is known that several large mills have from time to time experimented to a greater or lesser extent with cotton/rayon blend fabrics, but their results, for the most part, have been retained for their own use and have not been made available to others. Since such information has not been widely disseminated, and because of the increasing importance of resin finishing for apparel fabrics, and due also to certain economic factors which are coming into play, it is thought that now is a propitious time to demonstrate what can be accomplished by blending rayon with cotton, with the purpose of making this information available to those who might make use of it.

For the foregoing reasons, a project to investigate cotton/rayon blends was undertaken by the Man-Made Fiber Producers Association. This work was subsequently taken over by domestic rayon staple fiber producers, viz., American Enka Corp., American Viscose Corp., Courtaulds (Alabama) and Courtaulds (Canada). It was felt that an industry-wide approach would be the most effective way to disseminate whatever results are obtained in such a study.

Because rayon could be employed in blends with cotton in various proportions in so many different fabrics and under so many different conditions of treatment, it was recognized from the beginning that certain restrictions would have to be placed on the investigation. It was decided that a blend of two-thirds cotton and one-third rayon would be used in an 80 square printcloth which would be subjected to various preparatory treatments and subsequently would be resin finished to produce a minimum care fabric. It was thought that such an approach would have good possibilities for early commercial application. In order that mills might get into production with a minimum of delay and without added capital investment, it is necessary that cotton/rayon blend fabrics be run on conventional cotton bleaching equipment.

It is the purpose of this paper to describe results obtained when an 80 square cotton/rayon blend fabric was prepared for resin finishing, using scouring, bleaching and mercerizing procedures applicable on equipment available in most cotton bleacheries. This discussion is limited to the preparation of greige fabrics prior to resin finishing. Yarn preparation is not included, although it is recognized that certain settings, particularly twist multiplier, should be changed in order to obtain optimum results with cotton/rayon blends; it is recommended that lower twist multipliers be used. The results on resin treatment will be presented in a subsequent paper by J. A. Woodruff.

Because of the amount of fabric consumed in each run, and because of the time factor involved, it was not possible to study a large number of processing variables such as time, temperatures, and concentrations. Instead, the present discussion will be restricted to presentation of results obtained when different pieces of equipment were used to scour, bleach and mercerize cotton/rayon blend fabrics preparatory to resin treatment. Means of obtaining satisfactory results are described, but it is not suggested that these methods give the best results possible. The information which follows should therefore be regarded as a progress report on this subject, and further work is clearly indicated. Nevertheless, it is felt that this information is of value, and that in view of current economic conditions its presentation at this time is appropriate.

PROCEDURE

A standard 80 square fabric woven from yarns containing two-thirds cotton and one-third rayon was procured from a greige mill; in the discussion which follows, occasionally the symbol C/R will be used to designate this fabric. A similarly constructed all-cotton fabric was procured as a control. It was specified that the same cotton should be used in both fabrics.

Boil-Out and Bleaching

The assistance of two commercial finishing plants, both of which had experience with cotton/rayon blend fabrics, was enlisted to carry out the following preparatory treatments:

A. Pressure kier boil-out followed by chlorine bleach.
B. Open kier peroxide bleach (with sodium silicate and caustic soda).
C. Continuous peroxide bleach.
D. Batch process chlorite bleach.

Methods A and C above represent the two methods commonly used for 100% cotton fabrics. Method B was employed because, with one-third rayon in the blend, the fabric contains less wax, trash, and other non-cellulosic material and the more drastic pressure kier treatment may not be required. Finally, Method D was used because the chlorite treatment has been recommended as a safe bleaching method for cotton and rayon, as it can be used over a wide range of conditions of time, temperature, acidity and alkalinity, with negligible deleterious action.[3] Bleaching with sodium chlorite (Textone) is quite common in Europe, although little or no goods are bleached in this manner in this country.

Sequence of operations for Method A consisted of singeing, enzyme desizing, boil-out in closed kier, hypochlorite bleach, acid sour, rope wash, can and frame dry. All of the cotton and part of the cotton/rayon blend were given this treatment.

In Method B, after singeing and desizing, the goods were treated in an open kier with hydrogen peroxide, sodium silicate, and caustic soda, rope washed, can and frame dried.

For Method C, continuous peroxide bleach, the blend fabric was singed, enzyme desized, rope washed, saturated with caustic, entered into J box, rope washed, saturated with peroxide, entered into J box, rope washed, can and frame dried.

Chlorite bleaching, Method D, was done batch-wise on the jig where the fabric was enzyme desized, boiled-off with caustic, rinsed, soured, and bleached with sodium chlorite and hydrogen peroxide (with sodium tetraphosphate added). Can and frame drying followed.

Mercerization

Four mercerization treatments, employing three different methods, were used on selected bleached fabrics as shown in Table 1.

TABLE 1. MERCERIZATION TREATMENTS

1. Clip Tenter Method
   a. 35° Tw NaOH
   b. 55° Tw NaOH
2. "Chainless" Method, 45° Tw NaOH
3. Causticization Treatment on Pad

All of the cotton and part of the C/R fabrics were mercerized using a clip tenter (Method 1) to provide tension. Sequence of operations was as follows: Wet out fabric in water and partially dry on cans, pass into caustic mangle, tenter under tension, spray rinse, pass through steam chest without tension, pass through cold water tight strand washer, saturate with dilute sulphuric acid and enter into J box or scray, pass through two cold water tight strand washers, can and frame dry.

The essential difference in Method 2, "chainless mercerization," is that tension is exerted on the fabric by expander rolls rather than by a clip tenter frame.

In Method 3, the fabric was padded with 2% NaOH at 160°F., run continuously through the Williams Unit and slack loop washer at a minimum temperature of 160°F., then dried and framed. Because of the low concentration of caustic used, this treatment will be referred to as causticization, rather than mercerization.

RESULTS AND DISCUSSION

All fabric tests were made by an independent laboratory which has had considerable experience in the testing of the textile materials. Properties of greige fabrics used in this investigation are given below.

TABLE 2. LABORATORY TESTS ON GREIGE GOODS

	Cotton Control	Cotton/Rayon Blend
Measured Width in inches	39⅛	38¾
Ounces per sq. yd.	3.67	3.69
Av. Thread Count		
Warp	79	80
Filling	80	78
Breaking Load, Grab Method, lbs.		
Warp	71	65
Filling	56	51
Non-Fibrous Material Sizing, %	10.15	10.10

All tests conducted under standard atmospheric conditions. Width, weight, breaking load and thread count tests were conducted in accordance with Federal Specification CCC-T-191b.

The above test data are from two bales of 100% cotton fabric and three bales of cotton/rayon blend fabric. It is seen that weight, construction, and amount of sizing for the two fabrics are quite similar.

In the present discussion, fabric tear strengths are omitted because the level of this property is influenced greatly by the presence of softeners or lubricants which are usually added during finishing. For example, bleached and mercerized C/R (7 samples) and all-cotton (2 samples) fabrics were treated with a small amount of softener and trapezoid tear tests made. Results are given in Table 3.

TABLE 3. EFFECT OF SOFTENER ON TEAR STRENGTH OF COTTON AND COTTON/RAYON BLEND FABRICS

	Trapezoid Tear Strengths, lbs. (Sum of Warp + Filling)		Increase in Tear Strength Due to Softener (Per Cent)
	No Softener	With Softener	
Cotton	6.5	7.0	11
Cotton/Rayon Blend	6.0	8.5	40

Thus the C/R fabrics, which had lower tear strengths initially, have greater tear resistance after application of softener than does the all-cotton; an increase of 40% was realized with the C/R and 11% for the cotton.

This observation raises some interesting possibilities. Steele (4) recently published a paper in which data were presented on the improvement in tear strengths of all-cotton print and sheeting fabrics as a result of application of 1% of a quarternary softener. Tear tests were made by the tongue tear, Elmendorf, and trapezoid methods. It was found that the softener increased tear strengths when measured by the tongue and Elmendorf methods, but very little improvement (about 4.5%) was realized on the printcloth when the trapezoid method was used. In Table 3 above, we find an improvement in trapezoid tear strength of 11% on the all-cotton and 40% on the C/R after application of 0.5% of a quarternary softener. This suggests that cotton/rayon blend fabrics may derive a greater beneficial effect as a result of treatment with softeners than does all-cotton. In view of this, it is thought advisable to defer discussion of tear strengths until properties of finished fabrics are presented.

Physical properties of fabrics after bleaching by the methods described earlier are given in Table 4. In most fabrics of this type, and particularly in 80 square fabrics, lower tensile strengths are found in the filling, regardless of whether cotton or cotton/rayon blends are used. Consequently, for the sake of convenience, most of the discussion of the data which follow will be confined to filling properties.

The C/R fabrics, which were of the same weight as the all-cotton in the greige, have lost less weight than the cotton fabric as a result of bleaching. Constructions of all fabrics are similar enough to permit comparison of physical properties. It is seen that filling tensile strengths of the C/R fabrics bleached by the four different procedures compare favorably with the all-cotton fabric; in the blend bleached by the batch chlorite method, strengths are higher than in the all-cotton fabric, continuous peroxide bleaching gave the same strength, while the C/R fabrics prepared in the kier, both pressure and open, had slightly lower strengths. The differences, however, are not considered significant at this strength level and all fabrics appear to be sufficiently strong.

Abrasion resistance of all fabrics is about the same, with two of the C/R blends slightly higher and two slightly lower than the all-cotton.

Another method for assessing results of the bleaching operations described above is to examine changes in each fabric from greige through desizing, boil-out, and bleaching. These results are presented in Table 5.

From this table, it is interesting to observe that all of the C/R fabrics lose less weight as a result of the operation leading up to, and including, bleach-

TABLE 4. PHYSICAL PROPERTIES OF FABRICS AFTER BLEACHING

	Cotton Control	Cotton/Rayon Blend			
	Pressure Kier Chlorine Bleach	Pressure Kier Chlorine Bleach	Open Kier Peroxide Bleach	Continuous Peroxide Bleach	Batch Chlorite Bleach
Measured Width in inches	35⅜	35	35½	35	36¼
Ounces per sq. yd.	3.18	3.33	3.44	3.31	3.30
Thread Count					
Warp	87	88	88	88	86
Filling	75	75	74	76	75
Breaking Load, Grab Method, lbs.					
Warp	64	59	59	63	66
Filling	49	46	47	49	53
Abrasion Resistance Cycles	41	39	40	43	43
Dimensional Change, %					
Warp, gain	5	3	6	3	4
Filling, loss	9	11	9	6	8

The per cent gain in the warp and the per cent shrinkage in the filling are based on the 36-inch marks put in the greige goods before processing.

Abrasion tests were conducted on a Universal Wear Tester using 0.5 lb. head load, 4 p.s.i. pressure and "0" emery as an abradant. The specimens were abraded multi-directionally until a hole was produced in the specimen.

Width, weight, breaking load and thread count tests were conducted in accordance with the procedures prescribed in Federal Specification CCC-T-191b (standard conditions).

TABLE 5. PER CENT LOSS (OR GAIN) IN FABRIC PROPERTIES AFTER BLEACHING (BASED ON GREIGE FABRIC)

	Cotton Control	Cotton/Rayon Blend			
	Pressure Kier	Pressure Kier	Open Kier	Continuous Peroxide	Batch Chlorite
Width Loss	10	10	9	10	7
Length Gain	5	3	6	3	4
Weight Loss	13	10	7	10	11
Warp Tensile Loss	10	9	9	4	1 G
Filling Tensile Loss	13	11	9	5	3 G

G = Gain.

ing than does the 100% cotton fabric. This is to be expected since the cotton contains soluble materials which are removed by these treatments.

In filling tensile strength, all of the C/R fabrics exhibit lower losses than the all-cotton.

Mercerization

The presence of rayon in blends with cotton contributes to fabric luster and for this reason mercerization is not required for many uses. Furthermore, a recent report on a study of lightfastness of certain direct colors on cotton, rayon, and cotton/rayon blends (5) shows that the blend fabrics dyed after bleaching have in most cases equal and in some cases have lightfastness superior to all-cotton fabric which was dyed after bleaching and mercerizing. Nevertheless, it is realized that in some cases mercerization will be specified and for this reason the C/R fabrics processed by the continuous peroxide and batch chlorite methods were selected for the four different conditions of mercerization described below. Please note that all of the selected fabrics were not mercerized by each of the methods listed.

Laboratory tests on mercerized fabrics are given in Table 6.

For the sake of convenience in comparing fabrics mercerized under identical conditions, a portion of Table 6 has been extracted and is presented in Table 7.

In comparing properties of the C/R and all-cotton fabrics mercerized under identical conditions, it is seen that the C/R fabrics are equivalent to, if not slightly better than, the all-cotton. This comparison is valid because cloth constructions are almost identi-

Types of Mercerization Treatments Used

A. Mercerized on clip tenter with 35° Tw NaOH
   1. Continuous peroxide bleach—C/R
   2. Batch process chlorite bleach—C/R
   3. Pressure kier, chlorine bleach—100% cotton

B. Mercerized on clip tenter with 55° Tw NaOH
   1. Continuous peroxide bleach—C/R
   2. Batch process chlorite bleach—C/R
   3. Pressure kier, chlorine bleach—100% cotton

C. "Chainless" mercerization (45° Tw NaOH)
   1. Batch process chlorite bleach—C/R

D. Causticized with 2% NaOH (at 160° F.) on pad
   1. Continuous peroxide bleach—C/R
   2. Batch process chlorite bleach—C/R

TABLE 6. LABORATORY TESTS ON EXPLORATORY MERCERIZATION TREATMENTS

	Kier-boiled Cotton Control		Continuous Peroxide Bleached C/R			Batch Chlorite Bleached C/R			
	35°Tw.	55°Tw.	35°Tw.	55°Tw.	Pad-Caustic	35°Tw.	55°Tw.	Chainless	Pad-Caustic
Weight per sq. yd., oz.	3.28	3.22	3.33	3.35	3.46	3.40	3.44	3.29	3.61
Over-all width, in.	35	35¼	34⅞	34¾	36	34¾	35½	35¾	36
Thread Count									
Warp	89	89	90	89	87	89	87	86	87
Filling	76	75	74	75	79	74	74	74	77
Breaking Strength, lbs.									
Warp	66	61	60	59	59	61	63	56	63
Filling	43	39	45	40	48	42	45	42	54

All tests were conducted in accordance with Federal Specification CCC-T-191b
Method 5100 — Breaking Strength, Grab
5050 — Thread Count
5020 — Width
5041 — Weight

TABLE 7. PROPERTIES OF COTTON AND COTTON/RAYON BLENDS
after Mercerization with 35°Tw and 55°Tw NaOH

	Filling					
	Picks per inch		Tensile Str., lbs.		Fabric Weight oz./yd.²	
	35°	55°	35°	55°	35°	55°
Cotton pressure kier-chlorine	76	75	43	39	3.28	3.22
Cotton/Rayon blend, continuous peroxide	74	75	45	40	3.33	3.35
Cotton/Rayon blend batch-chlorite	74	74	42	45	3.40	3.44

cal and the slight differences which do exist favor the cotton fabric. Again it is seen that the C/R fabrics have slightly greater weight, at the same construction, than all-cotton fabrics, which indicates that a larger amount of soluble material was dissolved from the latter.

Without discussing in detail the effects of the various mercerizing treatments on the cotton/rayon blend fabrics, perhaps it is sufficient to say that all methods used produce satisfactory results with respect to strength and other properties.

The foregoing results indicate that C/R fabrics may be satisfactorily mercerized but, as in mercerizing cotton goods, certain precautions should be taken. It has been reported sometime ago by Hees (6) that, at a certain level of caustic soda concentration, rayon staple is extensively attacked. With sodium hydroxide, the danger point is found within concentrations of 11 to 16%. At about 8.4%, the staple enters a state of maximum swelling and then gradually goes into solution at higher concentrations. The solubility maximum is found at 11 to 12% NaOH. Higher concentrations, e.g., 19 to 30% NaOH, do not have the pronounced strong dissolving power for rayon staple.

Since mercerization is usually carried out with caustic soda in this concentration range, there is usually no danger for rayon staple while it is subjected to the action of the caustic soda. The subseqent rinsing out of the caustic, however, is believed by many to be the most critical step in the mercerization treatment. At this point large quantities of rinse water should be used in order that the critical range of caustic soda concentration will be passed through as rapidly as possible.

Furthermore, the temperature of the wash water is quite important, since the swelling of the cellulose in the critical concentration range is decreased with increasing temperature. Rinsing should, therefore, be carried out with hot water, followed by the customary acid bath to neutralize any remaining alkali.

In addition to the mercerizing wetting agents, certain additions to the mercerizing lye have been proposed which inhibit the swelling of the rayon and thereby reduce the possibilities of damage to the fabric. Examples of such materials are dextrin, magnesium and aluminum salts, especially aluminum thiocyanate.

SUMMARY

This paper presents the results obtained in bleaching and mercerizing 80 square standard printcloth fabrics made from 100% cotton yarns and a blend of two-thirds cotton and one-third rayon. The greige fabrics were similar in weight and construction.

Several different methods of bleaching and mercerizing were used for the C/R fabrics. Four procedures for bleaching were: Pressure kier—chlorine; open kier—peroxide, silicate, caustic; continuous peroxide; and batch chlorite. The 100% cotton fabric which was given a boil-out in the pressure kier, followed by chlorine bleaching and mercerization with 35° and 55° Tw NaOH, was used as a control.

Tests on greige fabrics gave lower tensile strengths for the C/R than for the all-cotton fabric. After bleaching, however, it was found that the C/R fabrics exhibited a smaller loss in strength than the all-cotton and consequently there are no large differences in fabric strengths after this treatment.

Tear strength is not discussed in detail since this is known to be influenced considerably by presence

(Continued on Page 84)

a preliminary survey

resin application to a 2\3 cotton-1\3 rayon blend fabric

By J. A. Woodruff

As the practical study on blend fabric "preparation" progressed (already discussed in T. R. Scott's paper) it became apparent that resin application information would be of great interest in order to broaden the picture for the manufacturers of the cotton/rayon blend fabrics. Therefore, a committee representing four rayon staple producers decided to use the same greige goods, 80 x 80 blend fabric, and the same cotton comparison fabric being used in the preparation study in order to make a survey of the effect of resin treatments on this material. The data obtained from this new work would then be a direct supplement to that obtained from the fabric preparation study and selected resin treatments could then be applied to the fabrics remaining from the preparation studies. It was realized that the resin survey would be somewhat handicapped since the optimum conditions of fabric preparation were not known until the conclusion of the work on preparation.

The 80 x 80 blend fabric was purchased in the greige along with an all cotton comparison of the same construction except for width. The plan was to prepare the blend with an open kier boil as well as with a continuous peroxide, silicate, scour and bleach procedure. The plan was to prepare the blend in three parts. One portion would be prepared with an open kier with caustic, perxoide and silicate to be followed by chain mercerizing. The other two parts would be prepared by continuous peroxide after which one part would be chainless mercerized and the other part would not be mercerized. The cotton fabric was to be split into two parts which would be routine prepared in two different finishing plants and both would be mercerized. Earlier independent trials had shown that high pressure alkaline kier boiling of blends should be avoided and that mercerizing should be followed by careful and rapid neutralization. The previous paper has already dealt fully with this subject.

These are the "prepared" fabric strengths and descriptions. Fabric #2 is the only one not mercerized. Fabric #3 has obviously been maltreated in chainless mercerizing and, therefore, does not offer much promise. Fabric #4 represents chain mercerizing and is the fabric to watch in the following comparisons with the all cotton fabrics.

	FABRIC	Warp	Filling	Ends — Picks
#1	Cotton	73.8	49.4	87 x 77
#2	Cotton/Rayon	57.9	50.9	86 x 78
#3	Cotton/Rayon	55.5	31.1	84 x 74
#4	Cotton/Rayon	68.3	54.7	93 x 76
#5	Cotton	77.9	50.3	91 x 79

RESIN APPLICATION

On order to obtain the most up-to-date knowledge on resin selection, short yardages of both the blend and the all cotton fabrics were sent to six major resin suppliers. They were requested to apply their best selected formulation for crease recovery and "wash-and-wear" performance. It is interesting to note that the suppliers used six resins which would be roughly classified as "ethylene ureas" and one which was listed as melamine type.

SUPPLIER WORK

As results of these independent inquiries, the general recommendations were to apply resins in the range of 12-20% solids in the chemical formulation with a wet pick-up of approximately 75%. Increased resin would be used on the blends in order to achieve an equivalent crease recovery and "wash-and-wear" rating. Tensile strength figures on these trials showed that the all cotton fabrics lost more tensile strength in all resin treatments than did the blend fabric. The crease recovery figures were good and were somewhat better with the cotton/rayon than the cotton.

INDEPENDENT RESEARCH

Since each supplier limited his recommendations to his own resins and often to his own catalysts, there were no examples of possible improved effects to be obtained by a blend of resins or catalyts. Consequently, it was decided to show the results of these trials

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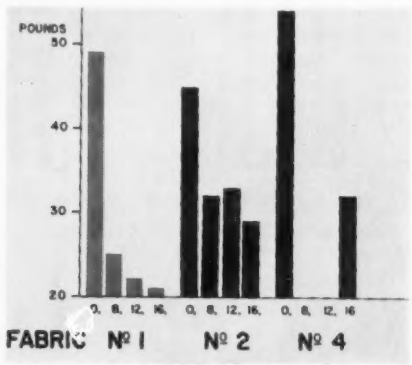
Jackson A. Woodruff

to the Gagliardi Research Corp. with the request that they try out on the blends and on the all cotton fabrics what they would consider to be the best formulation for the cotton and rayon blend fabrics. The work of this research corporation was carried out on blends of resins, catalysts, softners, and the like, including epoxy type resins combined with ethylene ureas. One can draw the conclusion that as of the date of these trials no one supplier had an inside track to a secret resin or combination of resins which would be much different in a broad performance sense from those of his competition.

More important are the facts shown in the next graphs.

Reference is made at this point to bar graphs A and B. Graph A shows the effect of increasing ethylene urea resin on the warp tensile strength. The advantage of the cotton/rayon blends at all resin concentrations is apparent. Graph B shows the effect of increasing ethylene urea resin on the sum of the warp and filling direction crease recovery readings. From the two graphs it is apparent that 16% resin at the pad for cotton/rayon blends will produce a higher crease resistance and yet be stronger than the cotton with only 8% resin.



Grab Tensile Test
Graph A

Based on "wash-and-wear" performance, crease recovery, and optimum tensiles, tears, and flex abrasion test figures, two formulations were offered in two percentage ranges.

APPLICATION

Practical application of resins were then made to three blend fabric preparations and to the two cotton comparisons on mill machinery as follows:

	TRIALS			
	A	B	C	D
% Ethylene Urea 50% Act.	10	14		
Melamine 80%			8	12
Polyethylene emulsion (30% Solids)	2	2		
Silicone			3	3
Zinc Nitrate Cat.	1.5	1.75		
Silicone Cat.			1	1
Magnesium Chloride Cat.			3.2	3.2

APPLICATION PROCEDURE

Pad, Dry on clip frame at 240°F.
Cotton fabric 39¼". Cotton/rayon 36¼"
Cure on frame at 320°F. for 2½ minutes.
Rope Wash—Igepon T and sodium perborate
Softener in last rinse.
Frame Dry at 39¼" for the cotton and
35¾" for the cotton/rayon.

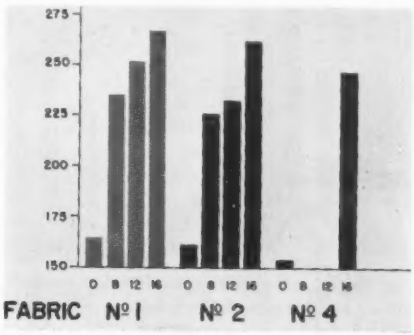
Visual inspection of the finished fabrics showed the following:

	Fabric	
#1 All cotton	86 x 77	39½" wide
#2 Cotton, rayon (not mercerized)	86 x 77	35¾" wide
#3 Cotton, rayon	85 x 75	36" wide
#4 Cotton, rayon	87 x 78	35¾" wide
#5 All cotton	87 x 77	39¼" wide

The general surface appearance was similar with all finished fabrics, although there were slightly more neps apparent in Fabric #2 which had not been mercerized. There was very little apparent luster difference between any of the samples after resin finishing. The hand of the cotton rayon fabrics was more silk like than those of the all cotton fabrics.

TEST RESULTS

All the 20 resin treated fabrics were submitted to an outside testing laboratory for analysis of physical properties and for "wash-and-wear" performance testing. This data shows the trends to be expected as the result of resin treatment of 2/3 cotton, 1/3

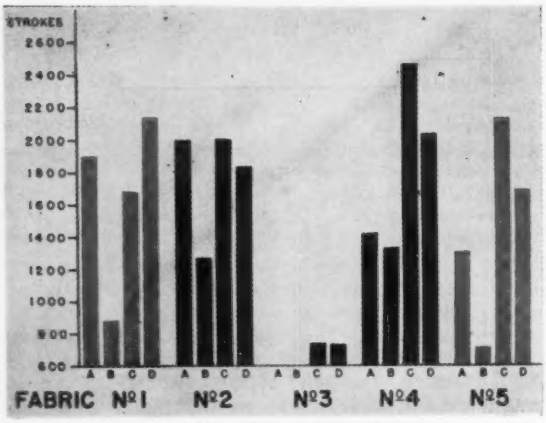


Sum of Crease Recovery—Monsanto Readings
Graph B

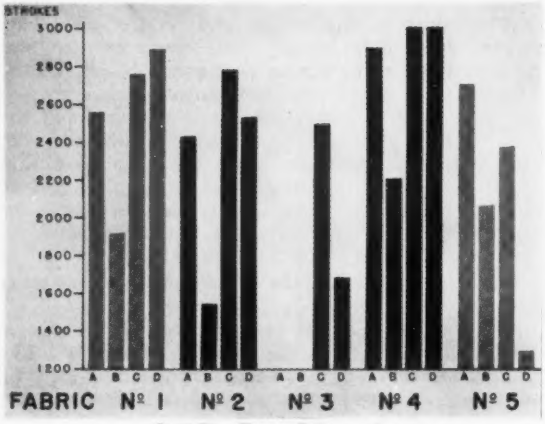
rayon blends as compared with 100% cotton. The figures for Fabric #3 show that it was damaged in preparation and, therefore, should be disregarded in the final appraisal. This is an example of the handicaps of not knowing the optimum method of fabric preparation at the start of the work. Statistically, Fabric #3 should probably not be shown in this paper but we felt it was part of our work and if all were cautioned that Fabric #3 was mishandled in preparation it would be of value to the finishers.

Shrinkage tests after laundering were as follows:

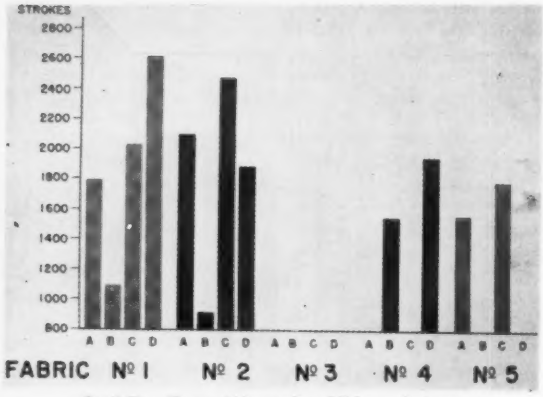
Fabric #1 A maximum of 1% in warp after 15 launderings.
A maximum of 0.5% in filling after 15 launderings.
#2 A maximum of 1.5% in warp after 15 launderings.
A maximum of 0.0% in filling after 15 launderings.
#3 A maximum of 0.5% in warp after 5 launderings.
A maximum of 0.0% in filling after 5 launderings.
#4 A maximum of 1.5% in warp after 15 launderings.
A maximum of 0.5% in filling after 15 launderings.



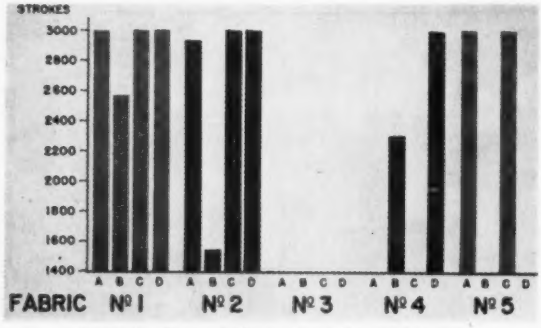
Stoll Flex Test—Warp only
Graph 1



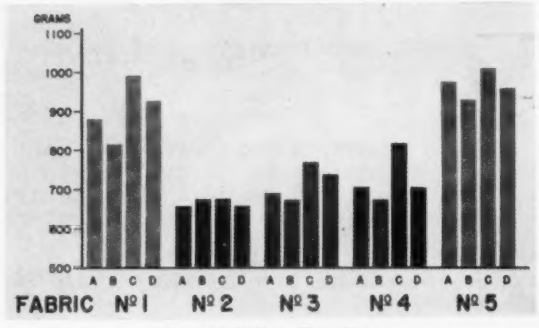
Stoll Flex Test—Filling only
Graph 2



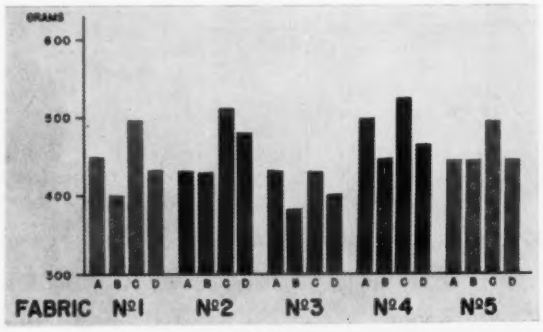
Stoll Flex Test—Warp after 15 Launderings
Graph 3



Stoll Flex Test—Filling after 15 Launderings
Graph 4



Elmendorf Warp Tear Test
Graph 5



Elmendorf Filling Tear Test
Graph 6

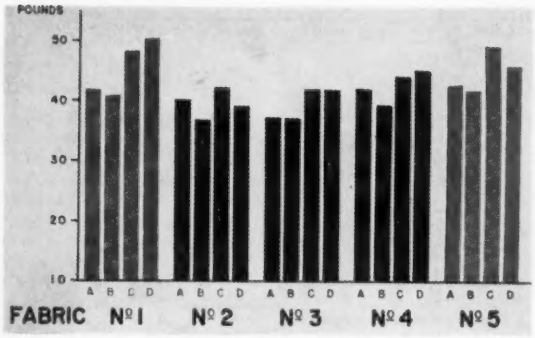
In order to quickly show the results of the tests for physical properties, bar graphs have been prepared showing comparisons of each tested property.

Graph #1, #2, #3 and #4 represent Stoll flex tests. The warp figures show approximately equal results for both the cotton rayon blends and all cotton fabrics. In the case of filling the cotton rayon blends were somewhat higher. After 15 launderings there is little appreciable difference.

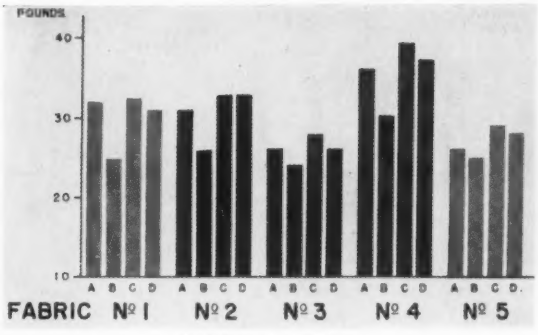
Graphs #5 and #6, Elmendorf tear test, show that while the warp tear on the cotton/rayon blends is lower than the all cotton, the filling is generally better and we believe you will agree that the filling in these fabrics is the problem yarn. The tear strength figures quoted in Mr. Scott's paper certainly show that the warp is up for the cotton/rayon over the all cotton and the Gagliardi Research Corp., which reported tear strengths in warp direction only, showed the cotton/rayon blends higher in all cases than the all cotton.

Graphs #7 and #8 show the warp and filling grab strengths. While the warp strength in the cotton/-rayon blends is down, in all cases the filling is up and in the case of our preferred fabric #4 by as much as 20%.

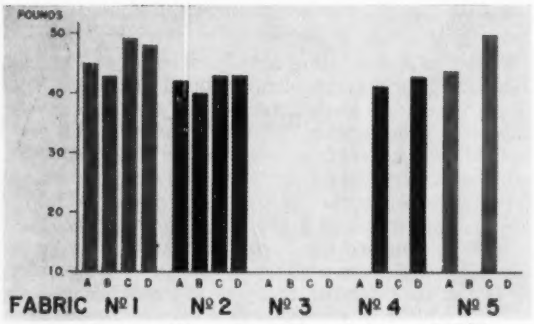
Graph #9 and #10 show the results after fifteen launderings in home laundering machines at 140°F.



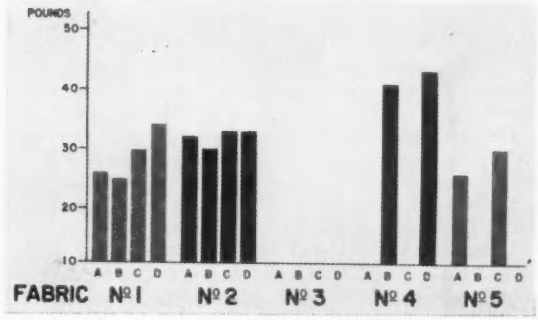
Grab Tensile—Warp
Graph 7



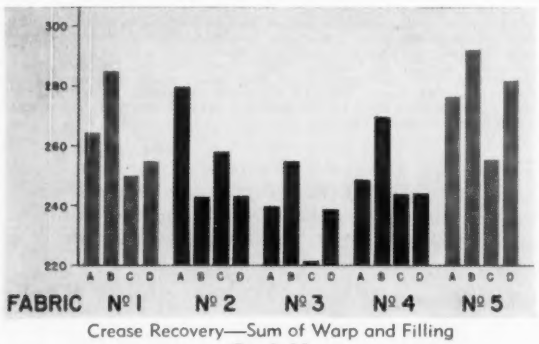
Grab Tensile—Filling
Graph 8



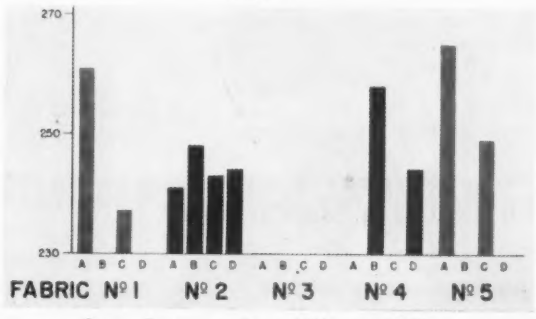
Grab Tensile—Warp after 15 Launderings at 140°F.
Graph 9



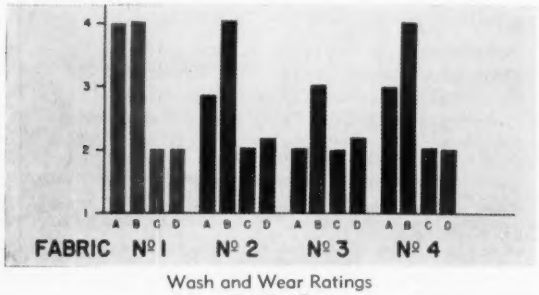
Grab Tensile—Filling after 15 Launderings at 140°F.
Graph 10



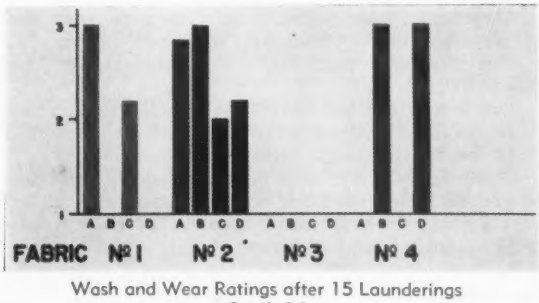
Crease Recovery—Sum of Warp and Filling
Graph 11



Crease Recovery—Sum of Warp and Filling
after 15 Launderings at 140°F.
Graph 12



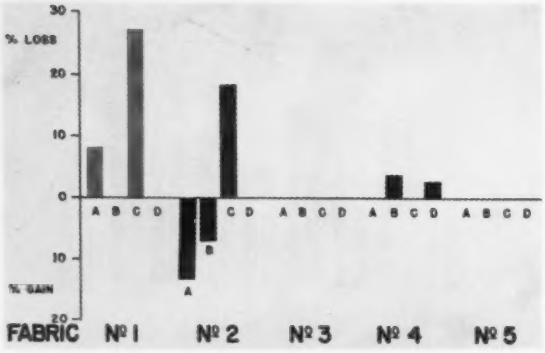
Wash and Wear Ratings
Graph 13



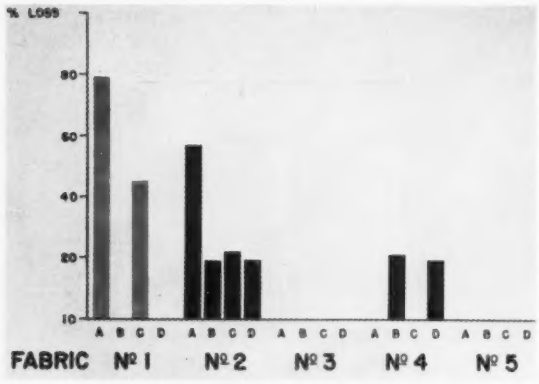
Wash and Wear Ratings after 15 Launderings
Graph 14

for thirty minutes. Markedly greater strength is shown in filling of the cotton/rayon blend after these 15 launderings. While the warp strengths are down slightly, they are more than compensated by the higher filling strengths.

Graphs #11 and #12 show a somewhat confusing picture. The crease recovery is plotted as the sum of warp and filling Monsanto readings. While the cotton/rayon blends are slightly lower than the all cotton, the values appear reversed in Graph #11 for A and B fabrics while C and D appear reversed in fabric #2. We are inclined to view these results first



Damage due to Retained Chlorine
Graph 15



Damage due to Retained Chlorine
after 15 Launderings
Graph 16

as errors of record and to question therefore both the Graphs #11 and #12. This is particularly so since the resin suppliers and Gagliardi Research Corp. showed cotton/rayon blends as having higher crease recovery.

Graphs #13 and #14 show "wash-and-wear" ratings using the very useful current A.A.T.C.C. procedure. Here ratings are equivalent for both cotton/rayon and cotton. This was true before and after 15 launderings without bleach.

Graphs #15 and #16 show "Damage Due to Retained Chlorine". This is the A.A.T.C.C. proposed test which when carried out by a single laboratory can give good comparison producibility. Here the cotton/rayon blends shine as the damage here is at all times less than the all cotton. With the market pressure on all of us for "wash-and-wear", this is of truly significant value.

Summary

Here are the major points of interest and well worth further investigation.

First of all, the filling tensile strength of the resin treated cotton/rayon blend fabrics is better than filling of the all cotton fabrics. It can be expected that when advantage is taken of the improved methods of preparation, even better tensile strength will result. With "wash-and-wear" being stressed, the value to the consumer in the performance of fabrics after laundering is of great importance and we have pointed out that cotton/rayon blends continue to improve in comparison with the all cotton as the launderings cycles are extended. Many resin treated fabrics appear as whites in washable end uses and here again we point to the fact that cotton/rayon blends show appreciably less damage due to retained chlorine.

This paper is the direct result of cooperative consultation of technical representatives of American Enka, American Viscose, Courtaulds (Alabama), and Courtaulds (Canada); respectively, Mr. T. R. Scott, Jr., Mr. J. A. Woodruff, Mr. A. B. Hilton, and Mr. Harry Palfreeman. The laboratory resin application work was carried out by suppliers of resins, by the Gagliardi Research Corp., and the commercial applications by Technical & Textile Service Department of American Viscose Corp.

Bleaching & Mercerizing

(Continued from Page 79)

of softeners which are usually added during the finishing operation. There are indications that the cotton/rayon blend fabrics show a greater increase in tear strength than 100% cotton after application of a softener.

All samples had approximately the same resistance to abrasion after bleaching, with two of the C/R blends slightly higher and two slightly lower than all-cotton.

The data presented show that the C/R fabrics may be mercerized by several methods without deleterious effect on fabric tensile strength.

If mercerization is employed, the usual precautions to prevent fabric damage are recommended. Important among these is rapid removal of caustic with large quantities of hot water.

As mentioned earlier, the data given indicate what has been accomplished in bleaching and mercerizing a cotton/rayon blend 80 square printcloth fabric preparatory to resin finishing. Procedures employed are not necessarily optimum in every case, but methods used are applicable on ordinary cotton bleachery equipment. Although further work must be done if this broad subject is to be covered comprehensively, it is felt that the results presented should be of value to those interested in finishing fabrics made from blends of cotton and rayon.

Acknowledgment

The data reported herein is part of a cooperative project sponsored by rayon staple fiber producers. The work was done under the direction of a technical committee composed of the following:

American Enka Corp.: T. R. Scott, Jr.
American Viscose Corp.: J. A. Woodruff
Courtaulds (Alabama) Inc.: A. B. Hilton
Courtaulds (Canada) Inc.: Harry Palfreeman

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[1] Heukers, E., "Rayon in Interlock," *Rayon Revue*, Vol. VII, 1953, pp. 98-105.
[2] Boyd, J., Butterworth, M., and Tattersfield, C. P., "Blends of Rayon-Cotton for Work Clothing," *Modern Textiles*, Part I, Nov. 1955, p. 52, Part II, Dec. 1955, p. 34.
[3] Marsh, J. T., "An Introduction to Textile Bleaching," John Wiley and Sons, Inc., N. Y., 1948, p. 233.
[4] Steele, Richard, "A Comparison of Fabric Wear Tests," *American Dyestuff Reporter*, Vol. 47, No. 5, Mar. 10, 1958, p. 143.
[5] Wilkinson, R. Stewart, "The Study of Lightfastness of Selected Direct Colors on Cotton, Rayon and Cotton-Rayon Blends," *American Dyestuff Reporter*, Vol. 47, No. 4, Feb. 24, 1958, p. 115.
[6] Hees, Walter, "A Contribution on the Mercerization of Blended Yarns," from *Melliand Textilberichte* XVIII (1937), pp. 367-70 and 446-8.
[7] Marsh, J. T., "An Introduction of Textile Bleaching," John Wiley and Sons, Inc., N. Y., 1948, p. 120.

For Discussion of AATT Papers see Page 87

Dyeing Notes

(Continued from Page 58)

Cotton Silicone Finish

The first silicone finish for cottons and cotton blends, and said to be durable to both washing and dry cleaning, has been announced by Dow Corning Corp. The manufacturer reports the new finish can be easily applied on conventional equipment and does not require after-washing or treatment to develop good water repellancy. Dow Corning plans to market the new product under their brand name Syl-Mer. It will be the eighth in the line of Syl-Mer products available for the finishing of virtually every type of woven or knitted fabric. *For further information write the editors.*

Snag-Resistant Hosiery Finish

Hart Products Corp. has announced Hartoresin NV, a polyvinyl acetate emulsion developed specifically for textile finishing. It is recommended for snag-resistant finishes on hosiery, stiffening lace nets, anti-curl treatment for tricot knits, as a bodying-agent for resin-treated cottons and for other textile applications. *For technical service sheets write the editors.*

Procion Blue Bulletin

Application of Procion Brilliant Blue H7G by dyeing and by printing on cellulosic fibers is described in a bulletin issued by Arnold, Hoffman & Co., Inc. The new dye is one of 18 presently available Procion colors said to achieve high wet fastness. The blue is described as a homogeneous product which gives brilliant turquoise shades. It may be applied to cellulosic fabrics either by pad-dry-steam or by hot batchwise procedures in conventional equipment at temperatures in the 185 to 212 degrees F. range. *For copies of the bulletin write the editors.*

Onyx Technical Data

Onyx Oil & Chemical Co. has issued new literature describing two of its products. A 20-page handbook, designed for easy reference, describes the firm's surface-active agents. It groups 90 different Onyx surfactants in three major categories—anionics, cationics, and nonionics—and lists specific applications and properties. The other is a technical data sheet which contains complete information on Resin 0-4, a new water-soluble, cellulose-reactant resin developed by Onyx. The new resin is said to impart crease-resistant and shrinkage-control characteristics. *For copies of the handbook and technical data sheet write the editors.*

U. S. MAN-MADE FIBER PRICES

This schedule lists the prices of yarns, staple and tow as reported by the producers in May 1958. All prices are given as subject to change without notice.

RAYON FILAMENT YARN

American Bemberg

Current Prices

Regular Production Reel Spun Yarn

Den/Fil	No Turn Skeins	Turned* Skeins & Cones	8½ Turns	High Turn Skeins & Cones 12 Turns	15 Turns	18 Turns
40/30	$1.49	$1.95	....	....	....	$2.08
50/36	1.24	1.50	....	....	....	1.80
65/45	1.14	1.30	....	$1.53	....	1.58
75/60**	1.04	1.18	....	1.41	$1.46	1.49
100/74**	.95	1.08	....	1.33	1.38	1.44
125/60	.94	1.05	$1.09	1.30	....	....
150/120	.93	1.02	1.12	1.27	....	....
300/225	....	.95	....	....	1.08	....
900/372	....	.85	....	....	....	....
1800/744	....	.85	....	....	....	....

* Turn includes twists up to 6 turns on 40 and 50 denier, and up to 5 turns on heavier deniers.
** Spun Dyed Cupracolor Black 15¢ per lb. extra.

"44" HH Spool Spun Yarn

Den/Fil	No Turn Tubes	No Turn Beams	5 Turn Beams	5 Turn Cones	12 Turn Beams	12 Turn Cones	15 Turn Cones
40/30	$1.35	$1.35	....	....	....	....	....
50/36	1.00	1.00	....	....	....	....	....
65/45	1.05	....	....	....	....	$1.42	....
75/45*	.97	....	$1.08	$1.08	$1.31	1.31	$1.39
100/60*	.89	....	1.03	1.03	1.23	1.23	1.31
125/60	.84	....	.99	.99	....	....	....
150/90*	.77	....	.81	.81	1.15	1.15	1.24
150/120	.81	....	....	.93	....	....	....

* Available also in Spun Dyed Cupracolor Black at 15¢ per lb. extra.

"44" HH "Parfe" (Type 51) Spool Spun Yarn

Den/Fil	No Turn Cones	5 Turn Cones	5 Turn Beams	12 Turn Cones	15 Turn Cones
50/36	$1.60	$1.85	$1.85	....	....
75/45	1.45	1.55	1.55	$1.75	$1.85
100/60	1.35	1.45	1.45	1.65	1.75
150/90	1.18	1.25	1.25	1.60	1.70

Nub-Lite (Short Nubbi)

Code	Den/Fil	2½ Turn Natural Cones	2½ Turn Cones*	5 Turn Natural Cones	5 Turn Cones*
1515	160/90	....	....	$1.45	$1.35
1519**	155/90	....	....	1.45	1.35
2008	200/120	....	....	1.06	.96
3002	315/180	$1.10	$1.00	....	....
4011	410/224	1.10	1.00	....	....
6001	600/360	1.08	.98	....	....
8001	860/450	1.08	.98	....	....

* Basic price for cones when dyed. Dyed Colors 30 and 35 cents above basic price. Prices based on 200 lb. dyed lots only. Prices for natural yarn skeins same as natural cone prices.
** Code 1515 can be run in warp or filling.

CUPIONI Type B

Code	Den/Fil	2½ Turn Cones	5 Turn Cones
9610	50/30	....	$2.14
9650	70/45	$1.64	....
9660	100/60	1.48	....
1545	150/90	1.25	....
9720	200/120	1.20	....
9730	285/135	1.10	....
9792	450/225	1.10	....
9814	600/372	1.07	....
9837	940/372	.97	....

"Spun Dyed Cupracolor is spun 150, 285, and 940 deniers at 35¢ per pound extra. Cupracolor Black comes in all deniers."

STRATA SLUB

Code	Den/Fil	Turned Cones	Price
9747	275/225	3½	1.20
9798	450/372	2½	1.10
9823	600/372	2½	1.05
9847	960/372	2½	.97
9885	1290/372	1½	.95
9934	2680/744	1½	.95

"Spun Dyed Cupracolor is spun in 600 and 960 deniers at 35¢ per pound extra."

FLAIKONA

Code	Den/Fil	Turned Cones	Price
9669	150/148	2½	$1.35
9769	300/224	3½	1.40
9807	600/405	2½	1.20
9840	900/450	2½	1.10
9924	2000/744	2½	1.00

"Spun Dyed Cupracolor Black 35¢ per pound extra."

Terms: Net 30 days, F. O. B. shipping point. Minimum freight allowed to consignee's nearest freight station east of the Mississippi River. To points west of the Mississippi River minimum freight allowed to Memphis, Tennessee. Goods after shipment shall be at buyer's risk. Merchandise transported in seller's own trucks or those of its affiliates is sold F. O. B. delivery point.

American Enka Corp.

Current Prices
Effective December 4, 1956
Standard Quality Yarns

Standard Quality Rayon Yarns

A. Natural

Den./Fil.	Luster	Turns	Weaving Cones	Skeins Beams	Skeins Long	Skeins Short	Cakes	Knitting Cones
50/18	E	5 S						1.56
50/20	B	2.5 S&Z					1.45	
75/10	B	3 S&Z					1.08	
75/18	E	4 S						1.22
75/30	B	2.5,4S&Z	1.17	1.17			1.08	1.17
75/30	B	8 S	1.22			1.37		1.22
75/45	P,E	2.5, 4,5S&Z	1.17	1.17	1.23	1.37	1.08	1.17
75/60	B,P	3,4 Z	1.22				1.10	1.22
100/14	B,P	3 S&Z				1.12	.96	
100/40	B,E	12 S						1.27
100/40	B,P,E	4,5 S&Z					.96	1.04
100/40	B	6 S	1.10					
100/40,60	B,P	2.5,4S&Z	1.04	1.04	1.08	1.12	.96	1.04
100/60	E	2.5 S	1.06	1.06			.98	
125/40	E	3 Z						.96
150/40	B,P,E	2.1,3S&Z	.91	.91	.94	.99	.86	.90
150/40	B,E	5 S&Z	.91		.94	.99	.86	
150/40	B,E	8 S&Z	.97		1.00	1.05		
150/90	B,E	2.1 S&Z	.92	.92			.87	
200/40	P	3 Z						.82
200/40	B,P	8 S				.95		
250/60	P,E	2.4 Z						.75
300/50	B,E	3 S	.73	.73				
300/60,120	B,P,E	2.1 S&Z	.73	.73		.76	.71	.73
300/60	B	3.5 S	.73	.73		.76	.71	
300/60	B	7 S	.83					
300/40,120 H.T.	B	2.5, 3,4S	.75	.75				
450/80	B	3 S	.70	.70		.72	.68	
600/80,120	B,E	3 S	.69	.69			.67	
900/120	B	3.4 S	.68				.66	
900/120 H.T.	B	3.6 S	.70				.68	

"Jetspun" Colored Yarns

Den./Fil.	Tenacity	Turns	Weaving Cones	Beams*	Cakes	Colors
100/40	Regular	2.5S	1.39	1.39		All
150/40	Regular	2.1S	1.26	1.26		All
200/40	Regular	8.3S	1.27			All
450/80	Regular	3.0S	1.05			All
300/40	High	3.4S	1.10	1.10		All
600/80	High	3.4S	1.06			All
900/120	High	3.4S	1.05	1.05		All

Registered trade mark of American Enka solution dyed rayon yarn.
* Single color.

"Skyloft"

American Enka's Lofted Filament Rayon Yarn
Natural and Jetspun (R)
Types Available and Prices

Denier	Den/Per Filament	JETSPUN Natural	JETSPUN Black	Other Colors
2200	15	$.67	$.79	$.84
2700	15	.65	.75	.82
4300	8	.64	.74	.81
5300	15	.63	.73	.80

American Viscose Corp.

Effective December 14, 1956

Graded Yarns

Denier	Filament	Type	Short Skeins	Long Skeins	All Cones Beams Tubes	Cakes
50	20	Bright & Dull	$	$1.59	$1.56	$1.45
60	10	Bright	....	....	1.41	1.30
75	10-30	Bright	1.24	1.20	1.17	1.08
75	30	Dull	....	....	1.17	1.08
100	14-40	Bright	1.12	1.07	1.04	.96
100	60	Dull	....	....	1.06	.98
150	24-40-60	Bright & Semi-Dull	.99	.94	.91	.86
150	40	Dull	....	....	.91	.86
150	90	Dull	....	....	.92	.87
200	10-44	Bright	.90	.85	.82	.78
250	60	Semi-Dull & Dull	.82	.78	.75	.73
300	30	Dull Flat Fil.	....	....	.79	....
300	44	Bright & Dull	.79	.76	.73	.71
300	234	Dull	....	....	.75	.73
300	120	Rayflex 6-Turns	....	....	.85	.83
450	100	Bright	....	.72	.70	.68
600	100	Bright	....	.71	.69	.67
900	60-100-150	Bright	....	.70	.68	.66
1200	75	Bright	....	.67	.65	....
2700	150	Bright	....	.70	.68	....

Extra Turns Per Inch

75	30	Bright 6-Turns	$1.36	$1.32	$1.29	$ ....
100	40	Bright 6-Turns	1.24	1.19	1.16	1.08
150	40	Bright 6-Turns	1.09	1.04	1.01	.96
200	44	Bright 6-Turns	....	.95	.92	....
300	15	Bright 5-Turns	....	....	.78	....
300	44	Bright 6-Turns	....	.86	.83	.81
600	30	Bright 5-Turns	....	.76	.74	.72

AATT Papers (Continued from Page 84)

Discussion

Following the presentation of the prepared papers there was a discussion period with questions submitted to the speakers by the audience. Gerard K. Lake, president of AATT, served as moderator. A summary of the questions and answers follows:

E. MILLER (Deering, Milliken): Mr. Lund, in your tests were the 100% cotton controls average quality or superior? If superior, what factors did you consider in rating them so? Please state full construction of both control and blend?

LUND: The 80 x 80 print cloths used in the exercise were woven by us in our textile research and development department. I should consider them average quality. All the constructions so far as ends and treatments were concerned are the same. The yarn twist was modified according to the blend. I believe the all-cotton was 4.5 and then something like 3.9 going down to about 3.5 for the all rayon.

MR. PRICE (J. P. Stevens): What method of blending and what twist multiples are recommended for 80 x 80?

LUND: 100% rayon needs less twist to develop adequate yarn strength than does cotton because of rayon's physical properties and the fact that you can get longer staple length for your money; we're talking 1¼ inch staple, 1½ denier. That means, as the amount of rayon in the blend is increased, the amount of twist should be decreased.

We also have strong evidence that the stability of all-rayon pure finished fabrics increases markedly as the twist is reduced. Higher twist gives more instability. Therefore, you should use as little twist as possible.

JAMES R. ROBINSON (Whitehouse Products, Inc.): The laundries have had a continuous headache with wash-and-wear. Have any tests been made in commercial laundries? Any on white goods such as shirts or sheets?

WOODRUFF: I can only speak for the work which was presented this evening and in that there were no tests made in laundries. Actually, the AATCC tests could be performed by anyone. We were working with fabrics and not garments. Therefore, I don't think there would have been any difference if we had done it in a laundry.

GEORGE C. HILL (Wellington Sears): Would the plus factors of the blends improve, remain the same or go down on coarser yarn fabrics, such as 20 singles?

LUND: As the yarns become coarser, you have more flexibility in the deniers you can use and the type of fabric hand you can get; otherwise I think the things we have been talking about should be applicable in general to fabrics of all constructions even though the degree may alter somewhat.

J. E. PHRAGMEN (Cohn-Hall-Marx): Were wet tear and tensile tests conducted?

LUND: The data I showed included the wet tensile strength, and in general, the same resin concentration. It looks as though the blends were just about as strong as the all-cotton. When you put on more resin to get the crease recovery up at the lower crease recovery angles, the blend was slightly weaker than the all-cotton. At the highest crease recovery angle, the blend was slightly stronger than the all-cotton, but it was doubtful whether this was significant at all.

Rayflex Yarns

75	30	Rayflex	$	$	$1.20	$1.11
100	40	Rayflex	....	....	1.07	.99
150	60	Rayflex	....	....	.94	.89
200	75	Rayflex	....	....	.85	.81
300	120	Rayflex	....	....	.75	.73
300	120	Rayflex 6-Turns	....	....	.85	.83
450	120	Rayflex	....	....	.72	.70
600	234	Rayflex	....	....	.71	.69
900	350	Rayflex	....	.72	.70	.68

Super Rayflex Yarns

600	490	Super Rayflex	$	$	$ .78	$ ....
900	720	Super Rayflex	....	....	.77	....

Thick and Thin Yarns

150	40-90	Bright & Dull	$	$	$1.15	$ ....
200	75	Bright & Dull	....	....	1.05	....
300	120	Bright & Dull	....	....	.95	....
450	100	Bright & Dull	....	....	.92	....
490	120	Bright & Dull	....	....	.95	....
900	350	Dull	....	....	1.00	....
920	120	Bright & Dull	....	....	1.00	....

Colorspun Yarns

Currently producing regular and high tenacity at premiums at $.35 per pound.

Viscose Filament Yarns

The following material deposit charges are required:

Metal Section Beams	$170.00 each
Wooden Section Beams	55.00 each
Wooden Section Beam Crates	30.00 each
Metal Section Beam Racks	75.00 each
Metal Tricot Spools—14" flange	30.00 each
21" flange	60.00 each
32" flange	150.00 each
Metal Tricot Spool Racks—14" flange	135.00 each
21" flange	100.00 each
32" flange	75.00 each
Wooden Tricot Spool Crates	20.00 each
Cloth Cake Covers	.05 each

Same to be credited upon return in good condition—freight collect.
Terms: Net 30 days.

Celanese Corp. of America

Current Prices
Effective December 14, 1956

Den.	Fil.	Twist		Beams	Cones	Cakes	Non Shrunk Tubes
#49 and #14 Production							
75/30/3	Bright			....	$1.11	$1.03	....
100/40/2Z	"			$.96	....	....	....
100/40/3	"			.98	.96	.91	....
100/40/5	"			....	1.02	.97	....
100/60/3	"			....	.97	.92	....
125/40/2Z	"			.94	.92	....	....
150/40/3	"			.89	.85	.80	....
150/40/2Z	"			.87	....	....	....
150/40/5	"			....	.91	.86	....
150/40/8	"			....	.97	.92	....
150/40/0	"		NS	....	.71	....	....
300/50/3	"			.72	.71	.69	....
300/50/0	"		NS	....	.63	....	....
#20 Production							
150/40/3	Bright			.87	.83	.78	....
150/40/0	"		NS	....	.71	....	....
150/40/2Z	"			.87	....	....	....
300/50/3	"			.72	.71	.69	....
300/50/0	"		NS	....	.63	....	....
#20 Production							
100/40/3	Dull			....	.96	.91	....
100/60/2Z	"			1.00	....	....	....
100/60/0	"			....	.93	....	....
100/60/5	"			1.04	1.02	.97	....
150/40/3	"			.87	.83	.78	$.77
150/40/0	"		NS	....	.71	....	....
150/90/3	"			....	.90	.85	....
250/60/0	"		NS	....	.67	....	....
250/60/3	"			....	.75	....	.70
#32 Thick & Thin Rayon							
150/60/3	Bright			....	1.15	....	....
450/120/3	"			....	.89	....	....

Terms: Net 30 days. Shipments prepaid to any destination in U.S.A. east of the Mississippi River. Shipments west of the Mississippi will be made on a collect freight basis and allowance will be made for the lowest transportation cost to the point of river crossing.
Prices subject to change without notice.
All previous prices withdrawn.
* No transportation allowed (F.O.B. shipping point).
Prices on unlisted items can be obtained upon request.
Orders are subject to conditions of sale appearing on our acknowledgments of orders.

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.
Current Prices
Effective with orders December 7, 1956

Bright and Dull

Den.	Fil.	Turns/ Inch Up to		(A) Cones, Beams, Tubes	Cakes
40	20	3	Textile "Cordura"*	$1.90	$1.85
50	20	3		1.63	
50	20	3	Textile "Cordura"	1.65	1.60
50	35	3	Textile "Cordura"	1.70	1.65
75	10	3		1.17	1.08
75	30	3		1.17	1.08
100	15	3		1.04	.96
100	40	3		1.04	.96
100	60	3	Dull	1.06	.98
125	50	3		.96	.90
150	40	3		.91	.86
150	60	3		.91	
150	60	3	Textile "Cordura"	.92	.87
150	90	3	Dull	.92	.87
150	100	3	Dull	.92	.87
300	50	3.5		.73	.71
300	120	3	Textile "Cordura"	.74	.72
450	72	3		.70	.68
600	96	3		.69	.67
600	240	3	Textile "Cordura"	.70	.68
900	50	3		.68	.66
900	144	3		.68	.66
1165	480	3	Textile "Cordura"	.68	.65
1800	100	3		.68	
2700	150	3		.68	

Thick and Thin

100	40	3	#7	1.38	1.38
150	90	3	#7	1.15	1.15
200	80	3	#7	1.05	1.05
450	100	3	#7	.89	.89
1100	240	3	#60	1.00	1.00
2200	480	3	#60	.95	.95

(A) 2¢/lb. additional for cones less than 3# and tubes less than 2#.
Terms: Net 30 days.
Domestic Freight Terms are F.O.B. shipping point, freight prepaid our route to points east of the Mississippi River within the continental limits of the United States, for points west of the Mississippi River freight allowed to the Mississippi River crossing nearest purchaser's mill if shipped overland, or port of exit of purchaser's choice east of Mississippi River.
* "CORDURA" and "SUPER CORDURA" are DuPont's registered trade-marks for its high tenacity rayon yarn.

Industrial Rayon Corp.

Effective December 21, 1956

Denier	Filament	Turns per In.	Type	2.8 Lb Cones	4.4 Lb Cones	Beams	2.2 Lb Tubes	4.4 Lb Tubes
100	40	2.5 "S"	Bright	1.04		1.04		
150	40	2.5 "S"	Bright	.91		.91		
150	40	2.5 "S"	Luster #4	.91		.91		
150	40	2.5 "S"	Bright intermediate strength	.92				
200	20	2.5 "S"	Bright	.82				
200	40	2.5 "S"	Bright	.82				
300	44	2.5 "S"	Bright	.73		.73		
300	80	2.5 "S"	Bright	.73		.73		
300	80	2.5 "S"	Luster #4	.73		.73		
300	80	2.5 "S"	Bright extra strong	.75		.75		
450	60	2.0 "S"	Bright		.70	.70		
600	90	1.5 "S"	Bright		.69	.69	.69	.69
900	50	2.0 "S"	Bright		.68	.68	.68	.68
900	150	1.5 "S"	Bright		.68	.68	.68	.68

Luster #4 is semi-dull.
Terms: Net 30 days f.o.b. point of shipment; title to pass to buyer on delivery of goods to carrier. Domestic transportation charges prepaid with transportation allowed at lowest published rate to all points east of the Mississippi River. PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE.

North American Rayon Corp.

Current Prices

First Quality Yarns	Den/Fil	Twist	Cones: Knitting* Cones	Cones: No Twist Knitting Cones	Cones: Beams, Tubes** and Weaving Cones	Cones: Untreated Cakes
	75/30	3.5			$1.17	$1.08
	75/30	7			1.30	
	75/30	15			1.37	
Normal	75/30	20			1.40	
Strength Yarns	100/40/60 Brt.	3.5			1.04	.96
NARCO	100/40/60	12			1.22	
	125/52/60	3			.96	.90
	125/52	10			1.13	
	150/42/60/75	3	$.90		.91	.86
	150/42	0		$.71		
	300/75	3	.73		.73	
	300/75	0		.63		
	600/98	3	.69		.69	
	900/46	2.5	.68		.68	
	1800/92	2.5	.68		.68	
Semi-High Strength Yarns Hi-NARCO	300/75	3			.74	

* Oiled Cones $.01 Per Pound extra for Graded Yarns only.
** 1 lb. tubes $.02 Per Pound extra for Graded Yarns only.
Terms: Net 30 days, F.O.B. shipping point, minimum freight allowed to consignee's nearest freight station east of the Mississippi River. To points west of the Mississippi River minimum freight to Memphis, Tennessee allowed. Goods after shipment shall be at buyer's risk. Merchandise transported in seller's own trucks or those of its affiliates is sold F.O.B. delivery point.
Prices subject to change without notice.

RAYON HIGH TENACITY YARN and FABRIC

American Enka Corp.

Effective June 1, 1957

Tempra (High Tenacity)

Denier	Elongation	Beams & Cones
1100/480	Low	.59
1230/480	High	.59
1650/720	Low	.55
1820/720	High	.55
2200/960	High & Low	.54

Suprenka (Extra High Tenacity)

1650/720	Low	.58
1900/720	High	.58
2200/960	Low	.57

Terms: Net 30 days, f.o.b. Enka, North Carolina, or Lowland, Tennessee; minimum freight allowed to first destination east of the Mississippi River.

Textile News Briefs

Machinery Firm Sold

Riggs & Lombard, Inc., of Lowell, Mass., has purchased Parks & Woolson Co., producer of wet and dry finishing machinery at Springfield, Vt. Since May 1, Parks & Woolson personnel has been located in the Riggs & Lombard Lowell works where all manufacturing is being carried on by the new owners. Parks & Woolson will operate as a division of Riggs & Lombard, for many years a manufacturer of textile machinery.

New Consultation Service

Charles S. Fowler plans to establish a consultation service in New York City for product and market development. He is resigning this month as manager of the woven goods department of Blue Ridge Textile Co. Fowler has been identified with the textile industry during his entire business career, specializing in yarns and fabrics of man-made fibers and blends, in both manufacturing and merchandising.

Rabun Mills Add Dye House

Rabun Mills, Inc., a wholly-owned subsidiary of James Lees and Sons Co. at Rabun Gap, Ga., is completing construction of a dye house for the blending of wool and man-made fibers, the dyeing of wool and other fibers and the dyeing of yarns and carpets. Also under construction to complement the dye house operations is an addition to the water pumping station, a complete filter plant, an addition to the steam power plant and an industrial waste treatment plant. The Rabun Gap operation, built on a 295-acre site, will have over 200,000 square feet of floor space when fully completed.

Film on Textile Fibers

At the Brussels World's Fair recently, Chemstrand Corp. held the world premiere of its film on natural and chemical textile fibers, called "Fibers and Civilization." Present at the screening were officials of the U. S. State Department and members of the American and European press. The movie covers the entire textile fiber industry Chemstrand's aim in preparing it was to present a complete and objective documentary film on the subject. The film will be made available for public and educational use after its advance showings. *For further information and to make inquiries for showing the film write the editors.*

American Viscose Corp.

Effective November 1, 1956
Revised June 10, 1957

Super Rayflex

Denier	Filament	Twist	Beams	Cones
1100	980	0	$.63	$.63
1100	980	4.1Z	.63	....
1100	980*	0-2Z	....	.63
1650	980	0	.58	.58
1650	980	4.1Z	.58	....
1780	980*	0-2Z	....	.58
2200	980	0	.57	.57

* High Elongation Sewing Yarn.

Tire Yarn

1100	490	2.5Z	.59	
1650	980	0	.55	.55
1650	980	3.6Z-4.1Z	.55	
2200	980	0	.54	.54

High Strength

1150	490	2.5Z	.59	.59
1230	490	3.1Z	.59	.59
1650	980	4Z	.55	.55
1875	980	4Z	.55	.55

Super Rayflex, Tire Yarn and High Strength yarns are sold "Not Guaranteed for Dyeing."

Tire Fabric

	Tire Yarn	Super Rayflex
1100/490/2	$.69	$.73
2200/980/2	.625	.655

Above prices based on 80% minimum Carcass, 15% maximum Top Ply, 5% maximum Breaker.

1650/980/2

* Production Factor

525	Open	Carcass	$.635	$.665
300	490	Top Ply	.645	.675
115	275**	Breaker	.67	.70

* Determined by dividing total ends by picks.

** Orders limited to 5% of total 1650 Fabric booked for any given period.

The following deposit charges are made on invoices:

Beams	$55.00 each
Crates (Metal)	75.00 each
Fabric Shell Rolls	3.50 each

Same to be credited upon return in good condition—freight collect
Terms: Net 30 days.

Celanese Corporation of America

Effective December 27, 1955
Supersedes September 12, 1955

Fortisan Yarn Prices

Denier	Packages	Natural	Black
30/2.5/40	2 lb. Cones	$3.00 lb.	$3.35 lb.
60/2.5/80	4 " "	2.40 "	2.75 "
90/2.5/120	4 " "	2.25 "	2.60 "
120/2.5/160	4 " "	2.05 "	2.40 "
150/2.5/180	4 " "	1.95 "	2.30 "
270/2.5/360	4 " "	1.85 "	2.20 "
300/2.5/360	4 " "	1.85 "	2.20 "
60/2.5/80 Olive Green—Spun Dyed—OG106		4 lb. Cones	3.50 lb.

Terms: Net 30 days. Shipments prepaid to any destination in U.S.A. east of the Mississippi River. Shipments west of the Mississippi will be made on a collect freight basis and allowance will be made for the lowest transportation cost to the point of river crossing.

Prices subject to change without notice.

All previous prices withdrawn.

* No transportation allowed (F.O.B. shipping point).

Prices on unlisted items can be obtained upon request.

Orders are subject to conditions of sale appearing on our acknowledgments of orders.

Fortisan-36 Rayon Yarn
Bright

Denier and Filament	Twist	4# cones	8# cones	Tubes	Beams
270/280	0.8Z	$2.30			
300/280	0.8Z	$2.05			
300/280	3Z	$2.20			
400/400	0.8Z	$1.75			$1.70
400/400	0			$1.75	
800/800	0.8Z	$1.25	$1.25		$1.20
800/800	3Z	$1.40			
800/800	0			$1.25	
1600/1600	0.8Z	$1.15	$1.15		$1.10
1600/1600	2½Z	$1.30			
1600/1600	0			$1.15	

Terms: Net 30 days. Shipments prepaid to any destination in U.S.A. east of the Mississippi River. Shipments west of the Mississippi will be made on a collect freight basis and allowance will be made for the lowest transportation cost to the point of river crossing.

Prices subject to change without notice.

All previous prices withdrawn.

* No transportation allowed (F.O.B. shipping point).

Prices on unlisted items can be obtained upon request.

Orders are subject to conditions of sale appearing on our acknowledgments of orders.

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.
Current Prices
Effective with shipments April 17, 1957

"Super Cordura"*

Den Fil	Turns/In	All Packages
1100-720	2	$.63
1200-720	2	.63
1530-960	2	.81
1600-960	2	.58
1650-1100	2	.58
1800-1100	2	.58
2200-1440	2	.57
2400-1440	2	.57

Terms: Net 30 days.

Domestic Freight Terms are F.O.B. shipping point, freight prepaid our route to points east of the Mississippi River within the continental limits of the United States, for points west of the Mississippi River freight allowed to the Mississippi River crossing nearest purchaser's mill if shipped overland, or port of exit of purchaser's choice east of Mississippi River.

* "CORDURA" and "SUPER CORDURA" are DuPont's registered trade-marks for its high tenacity rayon yarn.

Industrial Rayon Corp.

Effective November 1, 1956

Unbleached Bright High Tenacity Yarns

SINGLE END BEAMS AND CONES:

Den.	Fil.	Turns Per In.	4.4 Lb. Cones	Beams	2.2 Lb. Tubes	4.4 Lb. Tubes
1100	480	1.5 "Z"	.59	.59	.59	.59
1650	720	1.5 "Z"	.55		.55	.55
2200	1000	1.5 "Z"	.54	.54	.54	.54
3300	1440	1.5 "Z"	.54	.54	.54	.54
4400	2000	1.5 "Z"	.54	.54	.54	.54

"Above Prices apply to Type 100. Type 200 Tyron Prices are 3¢ more."

Terms: Net 30 days f.o.b. point of shipment; title to pass to buyer on delivery of goods to carrier. Domestic transportation charges allowed at lowest published rate to all points east of the Mississippi River.

Prices are subject to change without notice.

North American Rayon Corp.

High-Strength Yarns—SUPER-NARCO		Twist	Cones	Beams
1650	720	3Z		$.55
1850	720	3Z	$.55	
Super High Strength Yarns—				
1650	720	1.5Z	.58	.58

Terms: Net 30 days, f.o.b. shipping point. Minimum freight allowed to consignee's nearest freight station East of the Mississippi River. To points West of the Mississippi River minimum freight to Memphis, Tenn. allowed. Goods after shipment shall be at buyer's risk. Merchandise transported in seller's own trucks or those of its affiliates if sold f.o.b delivery point.

ACETATE FILAMENT YARN

American Viscose Corp.

Current Prices
Effective December 21, 1956

Bright and Dull

* Intermediate Twist

Denier & Filaments	Cones & 4-6 Lb. Tubes	Twister Tubes	Warps	Spinning Cones	Twist Warps
55/14	$1.04	$1.02	$1.05	$.98	$.99
75/20	1.00	.98	1.01	.94	.95
100/28	.95	.93	.96	.89	.90
120/32	.86	.84	.87	.80	.81
150/41	.77	.76	.78	.72	.73
200/54	.73	.72	.74	.69	.70
300/80	.69	.68	.70	.65	.66

* Standard Twist 2¢ additional.

Terms: net 30 days.

Celanese Corp. of America

Current Prices
Effective December 20, 1956

Bright and Dull

	Intermediate Twist				Spinning Twist		
Denier and Filaments	4 & 6-Lb Cones	Beams	4 & 6-TM Tubes	4-Pound Cheeses	Cones	Beams	O Twist Tubes
45/13	$1.17	$1.18	$	$	$	$1.12	$ ....
55/15	1.04	1.05	....	....	.98	.99	.925
75/20	1.00	1.01	.98	....	.94	.95	.84
75/50	1.02	1.03	1.00	....	....	.97	.89
100/26-40	.95	.96	.93	....	.89	.90	.81
120/40	.86	.87	.85	....	.80	.81	....
150/40	.77	.78	.77	.77	.72	.73	.69
200/52	.73	.74	.73	....	.69	.70	....
300/80	.69	.70	.69	....	.65	.66	.63
450/120	.67	.68	.67	....	.63	.64	....
600/160	.65	.66	.65	....	....	....	....
900/80-240	.63	.64	.63	....	....	....	.61

150 Denier 12-TM Tubes	.76
55/0/15 Dull Tricot Beams	.983
2-Pound Cheeses	.01 Less Than 4-Pound Cheeses
2-BU and 4-Bu Tubes	Same Price as 4 and 6-Lb. Cones
2-Lb. Twist Tubes	.01 Less Than 4 & 6-Lb. Twist Tubes on 120, 200 and 300 Denier Intermediate Twist

Terms: Net 30 days. Shipments prepaid to any destination in U.S.A. east of the Mississippi River. Shipments west of the Mississippi will be made on a collect freight basis and allowance will be made for the lowest transportation cost to the point of river crossing.

Prices subject to change without notice.

All previous prices withdrawn.

* No transportation allowed (F.O.B. shipping point).

Prices on unlisted items can be obtained upon request.

Orders are subject to conditions of sale appearing on our acknowledgments of orders.

Lurex Cuts Prices

Effective April 28, Dobeckmun Division of The Dow Chemical Co. announced reductions of from 5 to 25 cents per pound on four sizes only in the popular Mylar and foil type yarns sold under the trade mark Lurex-MF. The new prices are $5.70 per lb. for 1/64″; $5.60 for 1/50″; $5.50 for 1/32″ and $5.45 for 1/16″. No reductions are being made or contemplated on metallized Mylar type yarns, designated as Lurex-MM, in view of sizeable reductions made in January.

Instron in New Plant

Instron Engineering Corp., manufacturer of precision materials testing equipment, has moved into its new plant at 2500 Washington St., Canton, Mass. The new 25,000 square foot building is designed to facilitate maximum production flow, and provision has been made to permit future expansion when desired.

Appleton Buys Doven

Appleton Machine Co., Appleton, Wis., has acquired Doven Machine and Engineering, Inc., Chicago. Doven is a long-time manufacturer of specialty slitting and rewinding equipment for the textile industry. The plant will be moved to Appleton and operated under Eugene Doven, vice president, as the Doven Division of Appleton Machine Co.

Personnel Notes

J. W. Stuart

Stuart Joins Southern Loom

James W. Stuart, formerly vice president of Pneumafil Corp., has acquired a financial interest in Southern Loom Development Co., Greenville, S. C. and joined this firm on May 1 as vice president and general manager. The company manufactures and markets the Hunt Let-Off for looms, a device said to eliminate waviness and reduce labor costs in weave and cloth rooms.

Stuart was associated with Pneumafil since it began its manufacturing operations 11 years ago. He was in charge of sales for the past eight years.

Alex W. Spears, Jr. has been named sales and service representative for Mount Hope Machinery Co. serving Ala., W. Tenn., La., Miss., Ark., Texas and Okla. areas.

James R. Kallaher has been appointed general sales manager of National Vulcanized Fibre Co. and is succeeded in his former position as Chicago manager by **Donald W. Stewart.** Succeeding Mr. Stewart as Boston district sales manager is **Ralph E. Bryant. George K. LeVan** has been appointed to serve the company's New England area in a sales capacity.

J. W. Timperley F. Kinch

J. William Timperley has been appointed general manager of Kenyon Piece Dyeworks, Inc. and is succeeded in his former position as superintendent by **Fred Kinch.**

(Continued on Page 95)

Celaperm Filament Yarn Prices

Denier and Filaments	4 & 6-Lb. Intermediate Twist Cones	Intermediate Twist Beams	Spinning Twist Cones	Spinning Twist Beams
55/15	$1.37	$1.38	$1.31	$1.32
75/20	1.34	1.35	1.28	1.29
100/26	1.28	1.29	1.22	1.23
120/40	1.19	1.20	1.13	1.14
150/40	1.11	1.12	1.06	1.07
200/52	1.05	1.06	1.01	1.02
300/80	1.01	1.02	.97	.98
450/120	.99	1.00	.95	.96
600/160	.97	.98	....	....
900/80	.94	....	....	....

3 to 5 Turns on Cones or Beams — $.02 Additional

Celaperm Black Yarn Prices

Effective March 11, 1955

Denier and Filaments	4 & 6-Lb. Intermediate Twist Cones	Intermediate Twist Beams	Spinning Twist Cones	Spinning Twist Beams
55/15	$1.17	$1.18	$1.11	$1.12
75/20	1.14	1.15	1.08	1.09
100/26	1.08	1.09	1.02	1.03
120/40	.99	1.00	.93	.94
150/40	.91	.92	.86	.87
200/52	.85	.86	.81	.82
300/80	.81	.82	.77	.78
450/120	.79	.80	.75	.76
600/160	.77	.78	....	....
900/80	.74	....	....	....

Terms: Net 30 days. Transportation prepaid or allowed to any destination in U.S.A. East of Mississippi River. Transportation prepaid to any U.S.A. destination West of Mississippi River, but charge is made for the portion of transportation from river crossing nearest customer's location.

Prices subject to change without notice.

All previous prices withdrawn.

Note: Prices on unlisted items can be obtained upon request.

Orders are subject to conditions of sale appearing on our Acknowledgments of Orders.

Arnel Triacetate Yarn Prices
Bright & Dull

Denier and Filament	Cones	Beams	Thick & Thin Cones
55/WKZ/15	$	$1.02	$ ....
55/2Z/15	1.23	1.24	....
75/WKZ/20	....	1.11	....
75/2Z/20	1.16	1.17	....
75/2Z/40	1.24	1.25	....
100/2Z/26	1.10	1.11	....
120/2Z/32	1.01	1.02	....
150/2Z/40	.92	.93	....
200/2Z/52	.87	.88	1.19
300/2Z/80	.85	.86	1.17
450/2Z/120	.84	.85	....
600/2Z/160	.83	.84	1.15

3 to 5 Turns on Cones or Beams—$.02 Additional
Premium for Black Arnel—$.25 Per Pound
Premium for Navy Arnel—$.37 Per Pound

Terms: Net 30 days. Transportation prepaid or allowed to any destination in U.S.A. East of Mississippi River. Transportation prepaid to any U.S.A. destination West of Mississippi River, but charge is made for the portion of transportation from river crossing nearest customer's location.

Prices subject to change without notice.

All previous prices withdrawn.

Note: Prices on unlisted items can be obtained upon request.

Orders are subject to conditions of sale appearing on our Acknowledgments of Orders.

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.

Current Prices

Acetate

Denier & Filament	Zero Twist Tubes	Zero Twist Beams	Low Twist Cones	Low Twist Beams	Intermediate Twist 2 & 4 Lb. ⅝" Tbs.	Intermediate Twist 4 & 6 Lb. Tw. Tbs.	Intermediate Twist Cones	Intermediate Twist Bms.
45-18	$1.03	$1.11		$1.12				
55-18	.925	.985		.99			$1.04	$1.05
55-24	.925	.985		.99			1.04	1.05
75-24	.84	.94		.95		$.98	1.00	1.01
75-50				.97		1.00	1.02	1.03
100-32	.81	.89		.90		.93	.95	.96
120-50	.77	.80		.81		.85	.86	.87
150-40	.69	.72	.72	.73	.77	.77	.77	.78
200-60	.68		.69	.70	.73	.73	.73	.74
240-80			.67				.71	
300-80	.63	.65	.65	.66	.69	.69	.69	.70
450-120	.63		.63	.64	.67	.67	.67	.68
600-160					.65		.65	.66
900-44					.63		.63	.64
900-240					.63		.63	.64
1800-88					.61		.61	.62
2700-132					.61		.61	.62
3000-210					.61			.62

(A) Regular Twist (2.9 and 5 T.P.I.)—add $.02 to Intermediate Twist Price.

(B) 1 lb. ⅝" Tubes—add $.02 to 2 & 4 lb. ⅝" Tube Price.

Color-Sealed

Denier & Filament	Zero Twist Tubes	Zero Twist Beams	Low Twist Cones	Low Twist Beams	Intermediate Twist Twisted Tubes 2 Lb.	Intermediate Twist Twisted Tubes 4 & 6 Lb.	Intermediate Twist Cones	Intermediate Twist Beams
55-18	$1.245	$1.315		$1.32	$1.35	$1.35	$1.37	$1.38
75-24	1.18	1.28		1.29	1.32	1.32	1.34	1.35
100-32	1.14			1.23	1.26	1.26	1.28	1.29
150-40	1.03	1.06	1.06	1.07	1.10	1.11	1.11	1.12
200-64	1.00		1.01	1.02	1.04	1.05	1.05	1.06
300-80	.95	.97	.97	.98	1.00	1.01	1.01	1.02

(A) Regular Twist—Add $.02 to Intermediate Twist Price.

Black

Denier & Filament	Zero Twist Tubes	Zero Twist Beams	Low Twist Cones	Low Twist Beams	Intermediate Twist 2 & 4 Lb. ⅝" Tbs.	Intermediate Twist 4 & 6 Lb. Tw. Tbs.	Intermediate Twist Cones	Intermediate Twist Beams
55-18	$1.045	$1.115		$1.12		$1.15	$1.17	$1.18
75-24	.98	1.08		1.09		1.12	1.14	1.15
100-32	.94			1.03		1.06	1.08	1.09
150-40	.83	.86	.86	.87		.91	.91	.92
200-60	.80		.81	.82		.85	.85	.86
300-80	.75	.77	.77	.78	.81	.81	.81	.82
450-120			.75	.76	.79	.79	.79	.80
600-160			.73	.74	.77	.77	.77	.78
900-240			.73	.74	.74	.74	.74	.75

(A) Regular Twist (2.9 and 5 T.P.I.)—add $.02 to Int. Twist Price.

(B) 1 lb. ⅝" Tubes—add $.02 to 2 & 4 lb. ⅝" Tube Price.

Specialty Yarns

Type 20 — Same Price as Regular Yarn
Type C — Same Price as Regular Yarn

Thick & Thin

Denier & Filament	Natural Cones	Natural Beams	Black Cones	Black Beams	Color-Sealed Cones	Color-Sealed Beams
200-64 Int. Twist	1.05		$1.15		$1.35	
200-64 Reg. Twist	1.08	$1.09	1.17	$1.21		

Terms: Net 30 days. Subject to change without notice.

Domestic Freight Terms are F.O.B. shipping point, freight prepaid our route to points east of the Mississippi River within the continental limits of the United States, for points west of the Mississippi River freight allowed to the Mississippi River crossing nearest purchaser's mill if shipped overland, or port of exit of purchaser's choice east of Mississippi River.

Eastman Chemical Products, Inc.

Tennessee Eastman Co.

Effective December 21, 1956

"Estron"* Yarn, Bright or Dull — White

Denier & Filament	Regular Twist Cones	Intermediate Twist Cones	Intermediate Twist Tubes	Intermediate Twist Beams	Low Twist Cones	Low Twist Beams	Zero Twist Tubes	Tricot Beams Spun Twist	Tricot Beams Zero Twist
55/13	$1.06	$1.04	$1.02	$1.05	$.98	$.99	$.92½	$.99	$.98½
75/19	1.02	1.00	.98	1.01	.94	.95	.84	.95	....
75/49	1.04	1.02		1.03				....	....
100/25	.97	.95	.93	.96	.89	.90	.81	....	....
120/30	.88	.86	.84	.87	.80	.81		....	....
150/38	.79	.77	....	.78	.72	.73	.69	....	....
200/50	.75	.73	....	.74	.69	.70		....	....
300/75	.71	.69	....	.70	.65	.66	.63	....	....
450/114	.69	.67	....	.68	.63	.64		....	....
600/156	.67	.65	....	.66	.62	.63	.63	....	....
900/230	.65	.63	....	.64	....	....	.61	....	....
Heavier	....	....	....	....	....	....	.56	....	....

Current Prices—December 19, 1955

"Chromspun"*—Standard Colors (Except Black)

Denier & Filament	Regular Twist Cones	Regular Twist Beams	Intermediate Twist Cones	Intermediate Twist Beams	Low Twist Cones	Low Twist Beams
55/13	$1.39	$1.40	$1.37	$1.38	$1.31	$1.32
75/19	1.36	1.37	1.34	1.35	1.28	1.29
100/25	1.30	1.31	1.28	1.29	1.22	1.23
150/38	....	....	1.11	1.12	1.06	1.07
300/75	....	....	1.01	1.02	.97	.98
450/114	....	....	.99	1.00	.95	.96
900/230	....	....	.94	.95	....	....

Current Prices

"Chromspun"*—Black

Denier & Filament	Regular Twist Cones	Intermediate Twist Cones	Intermediate Twist Beams	Low Twist & Spun Twist Beams
55/13	$1.19	$1.17	$1.18	$1.12
75/19	1.16	1.14	1.15	1.09
100/25	1.10	1.08	1.09	1.03
150/38	.93	.91	.92	.87
200/50	.87	.85	.86	.82
300/75	.83	.81	.82	.78
450/114	.81	.79	.80	.76
900/230	.76	.74	.75	....

Prices are subject to change without notice.

Prices on special items quoted on request.

Terms: Net 30 days. Payment—U. S. A. dollars.

Transportation charges prepaid or allowed to destination in the United States east of Mississippi River. Seller reserves right to select route and method of shipment. If Buyer requests and Seller agrees to a route or method involving higher than lowest rate Buyer shall pay the excess of transportation cost and tax.

* "Estron" and "Chromspun" are trade-marks of the Eastman Kodak Co.

RAYON STAPLE and TOW

American Viscose Corp.

Current Prices

Rayon Staple

	Bright and Dull
Regular	$ .31
Extra Strength	
1.0 Denier	.34
"Viscose 32A"	.36
"Avisco Crimped"	
1.25 Denier	.34
3.0 & 5.5 Deniers	.32
8.0 & 15.0 Deniers	.34
"Avisco Super L"	
8.0, 15.0 & 22.0 Deniers	.35
Short Staple Blend	.33

Rayon Tow

Grouped Continuous Filaments (200,000 Total Denier)

1.5, 3.0 & 5.5 Denier Per Filament	.33
9.0 Denier Per Filament	.35
Grouped Continuous Filaments (4400/300 & 2000/1500)	.65

Prices of other descriptions on request.
Terms: Net 30 days.

American Enka Corp.

Current Prices Effective 1/1/58

Rayon Staple

Regular

	Brt.	Dull
1.5 and 3 denier	$ .31	$ .31

Crimped

8 denier	.34	....
15 denier	.34	.34

Celanese Corp. of America

Current Prices

Rayon Tow

	Bright & Dull
1.5, 3, 5.5 D.P.F.	.33
8 D.P.F.	.35

Terms: Net 30 days. Transportation prepaid or allowed to any destination in U.S.A. East of Mississippi River. Transportation prepaid to any U.S.A. destination West of Mississippi River, but charge is made for the portion of transportation from river crossing nearest customer's location.
Prices subject to change without notice.
All previous prices withdrawn.
Note: Prices on unlisted items can be obtained upon request.
Orders are subject to conditions of sale appearing on our Acknowledgments of Orders.

Courtaulds (Alabama) Inc.

Effective March 7, 1958

Rayon Staple

	Bright	Dull
1½ and 3 denier	$.31	$.31
Available in 1⅛", 1-9/16" and 2".		

Crimped Rayon Staple

3 and 5½ denier	$.32	$.32
Available in 1-9/16" and 3".		
3 denier		.32
Available in 2".		

"Coloray" Spun Dyed Rayon Staple

	1½ Den. 1-9/16"	3 Den. 2"	Price per Lb.
	(Code numbers for color and denier)		
Black	1404	1419	37¢
Tan	8004	8019	39¢
Medium Brown	8804	8819	39¢
Silver Grey	1004	1019	39¢
Mocha	7704	7719	39¢
Dark Brown	8604	8619	40¢
Aqua	4704	4719	40¢
Rose	5804	5819	40¢
Dawn Pink	5904	5919	40¢
Ecru	7904	7919	40¢
Slate Grey	0804	0819	43¢
Light Blue	4004	4019	44¢
Sulphur	2004	2019	44¢
Nugget	2304	2319	44¢
Apple Green	5104	5119	45¢
Sage	5304	5319	45¢
Crystal Blue	3904	3919	45¢
Peacock Blue	4604	4619	46¢
Medium Blue	4204	4219	48¢
Dark Blue	4404	4419	49¢
Hunter Green	5404	5419	49¢
Indian Yellow	2504	2519	49¢
Pink	6004	6019	50¢
Turquoise	4804	4819	50¢
Malachite Green	5204	5219	51¢
Red	7004	7019	56¢

(In addition to the above, Black is also available in:
1½ den. 1⅛" (1401) 3 den. 1-9/16" (1416)
3 den. 1⅛" (1413) 5½ den. 3" (1429)

Terms: Net 30 days f.o.b. LeMoyne, Alabama; Minimum transportation allowed to points in U.S.A. east of Mississippi River.

The Hartford Rayon Co.

Div. Bigelow-Sanford Carpet Co., Inc.

Rayon Staple

Effective January 1, 1958

REGULAR

1.5 denier Bright 1½"	.31
5½ denier Bright 1½", 3" and 4½"	.32

VISCALON 66 (Crimped)

8 denier 3" Bright	.34
15 denier 3" Bright	.34
15 denier 3" Dull	.34

"KOLORBON"—Solution Dyed Rayon Staple—3" and 6"

	8 Denier Bright	15 Denier Dull	15 Denier Bright
Cloud Grey	45¢	45¢	....
Sandalwood	45¢	45¢	....
Nutria	45¢	45¢	....
Sea Green	45¢	45¢	....
Mint Green	45¢	45¢	....
Champagne	45¢	45¢	....
Cafe Brown	55¢	....	55¢
Midnight Black	45¢	....	45¢
Gold	48¢	48¢	....
Turquoise	45¢	45¢	....
Melon	48¢	48¢	....
Capri Blue	45¢	45¢	....
Charcoal Grey	45¢	45¢	....
Coco	46¢	46¢	....
Sable	47¢	....	47¢
Tangerine	58¢	....	58¢
Chinese Red	59¢	....	59¢
Larkspur Blue	45¢	45¢	....
Royal Blue	55¢	....	55¢
Lemon Peel	46¢	46¢	46¢
Kelly Green	46¢	46¢	46¢
Bitter Green	55¢	....	55¢

Terms: Net 30 days. Prices are quoted f.o.b. shipping point, lowest cost of transportation allowed, or prepaid. To points West of the Mississippi, lowest cost of transportation allowed to the Mississippi River crossing.

North American Rayon Corporation

Current Prices

Rayon Staple

High Tenacity	Bright
No. 1 (Unshrunk)	
1, 1.5 & 3 deniers	.40
No. 2 (Preshrunk)	
1, 1.5 & 3 deniers	.40

Rayon Tow

2200 denier, 1.0 and 1.5 D/F	.55
4400 denier, 1.0 and 1.5 D/F	.45

ACETATE STAPLE and TOW

Celanese Corp. of America

Current Prices

Staple

	Bright & Dull
Celanese Acetate Staple	
3, 5.5 & 8 Denier (Regular Crimp or High Crimp)	$.36
2, 12 & 17 Denier (Regular Crimp or High Crimp)	.36
35 Denier	.38
50 Denier	.40
Type F — 5.5, 8, 12, 17 Denier	.35
Type K — (Available under Celanese License Agreement)	.39
⅝" to 7/8" length (All Deniers)	.03 (premium)
35 Denier Flat Filament Acetate	.40
Non-Textile Acetate Fibers	.28

Tow (Celatow)

3, 5.5 & 8 Denier	$.37
2, 12 & 17 Denier	.37
35 Denier	.40
50 Denier	.42

Terms: Net 30 days. Shipments prepaid to any destination in U.S.A. east of the Mississippi River. Shipments west of the Mississippi will be made on a collect freight basis and allowance will be made for the lowest transportation cost to the point of river crossing.
Prices subject to change without notice.
All previous prices withdrawn.
* No transportation allowed (F.O.B. shipping point).
Prices on unlisted items can be obtained upon request.
Orders are subject to conditions of sale appearing on our acknowledgments of orders.

Arnel Triacetate Staple and Tow

	Bright & Dull
Arnel Triacetate Staple	
2.5 Individual Denier	$.55
5.0 Individual Denier	.55
Arnel Triacetate Tow	
2.5 Individual Denier 114,000 Total Denier	$.60
5.0 Individual Denier 90,000 Total Denier or 180,000 Total Denier	.60

Packaged on Ball Warps
Terms: Net 30 days. Transportation prepaid or allowed to any destination in U.S.A. east of Mississippi River. Transportation prepaid to any U.S.A. destination west of Mississippi River, but charge is made for the portion of transportation from river crossing nearest customer's location.
Prices subject to change without notice.
All previous prices withdrawn.
Note: Prices on unlisted items can be obtained upon request.
Orders are subject to conditions of sale appearing on our acknowledgments of orders.

NON CELLULOSIC YARN

NYLON

Allied Chemical Corporation

Caprolan®†

Effective December 3, 1957

Denier	Filament	Turn/In.	Twist	Type**	Package	1st Grade Price/Lb.
560	32	1	Z	HB	Aluminum Tube	$1.39
840	136	½	Z	HBT	Aluminum Tube	1.30
840	136	½	Z	HBT	Beams	1.30
Heavy Yarn						
2100	408	0	O	HB	Paper Tube*	$1.27
2100	112	0	O	HB	Paper Tube*	1.30
2500	408	0	O	HB	Paper Tube*	1.27
3360	544	0	O	HB	Paper Tube*	1.26
4200	680	0	O	HB	Paper Tube*	1.26
4200	224	0	O	HB	Paper Tube*	1.29
5000	816	0	O	HB	Paper Tube*	1.25
5000	280	0	O	HB	Paper Tube*	1.28
5800	952	0	O	HB	Paper Tube*	1.25
7500	1224	0	O	HB	Paper Tube*	1.24
10000	1632	0	O	HB	Paper Tube*	1.24
15000	2448	0	O	HB	Paper Tube*	1.23

News (Continued from Page 91)

Fernand Schlaeppi has been promoted to the post of technical manager of the New England district for Ciba Co., Inc.

J. Earl Burrell has been appointed general manager of operations for Columbia-Southern Chemical Corp., succeeding the late Robert L. Hutchison.

James J. Hackett has been appointed a vice president of J. P. Stevens & Co., Inc.

Donald H. Brafford has been appointed senior chemist of Stowe-Woodward, Inc.'s Research & Development Department.

W. K. Wyatt

W. Kirk Wyatt has been named vice president of Turbo Machine Co.

J. D. Hallaren

John D. Hallaren has been named to the newly-created post of director of the tire cord division at American Rayon Institute, Inc.

John W. Quinn has been named representative for Synthane Corp. in Vermont, W. Mass., N. E. Conn., and N. E. New York areas.

Herbert R. Silverman has been elected president of James Talcott, Inc. In the same company **Hooker Talcott** and **Emanuel P. Lewis** have become vice chairmen, and **Harvey M. Kelsey, Jr.** has been elected treasurer.

Harold A. Swanson, vice president of Nopco Chemical Co., has been elected to the company's board of directors. Mr. Swanson is in charge of sales and laboratories of Nopco's Industrial and Fine Chemical Divisions.

O. H. Tousey, vice president of Penick & Ford., Ltd., Inc. has been elected a director of the corporation. **J. S. Ragland,** controller, has been elected treasurer.

J. E. Moore has been appointed assistant to the manager of the dyes department, Organic Chemicals Division, American Cyanamid Co.

Frank D. McKay, Jr. has been transferred from Duplan Corp.'s Winston-Salem office to the company's New York sales office.

A. E. Young

Arthur E. Young, manager of the Dow Chemical Co.'s Zefran Textile Fibers Division, has been elected to the board of directors of Saran Yarns Co. Saran Yarns is a jointly owned associate of the National Plastic Products Co. and Dow Chemical Co.

Richard W. Eddy has been appointed manager of the new chemicals division of Union Carbide Chemicals Co., a division of Union Carbide Corp.

R. I. Dalton, Jr., southern agent in the Whitin Machine Works' Charlotte office, has been promoted to the company's main sales offices in Whitinsville. He will work with the vice president in charge of cotton and spun rayon sales. **Frederick A. Odell** has been appointed assistant manager of the export sales division of the company.

D. A. Spencer

Dederick A. Spencer is now associated with Howard Bros. Mfg. Co., Worcester, Mass. He will make his headquarters at the firm's branch in Greenville, S. C.

Charles D. Francis, Jr. has become director of labor relations for Celanese Corp. of America. **Richard B. Gruen** has been appointed manager of retail relations for the company's textile division. In the same division **Murray D. Ewing** has been appointed to the newly created position of director of new product merchandising.

Terms—Net 30 days.
Prices subject to change without notice.
All prices quoted F.O.B. Shipping Point.
Following are invoiced as a separate item.
Bobbins—45 cents each.
Aluminum Tubes—40 cents each.
Beams—$220.00 each.
Cradles for Beams—$53.00.
* Paper Tubes non-returnable, no charge.
** Type is used to describe luster and tenacity

B—Bright.
H—High Tenacity.
T—Heat Stabilized.

Lowest freight cost prepaid or allowed east of Mississippi River, for points west of the Mississippi River freight allowed to the Mississippi River crossing nearest purchaser's mill if shipped overland, or port of exit of purchaser's choice east of Mississippi River.

† Allied Chemical's polyamide fiber.

American Enka Corporation

Enka Nylon Yarn Prices
Effective March 13, 1958

Denier & Filament	Twist	Luster	Tenacity	Package	Yarn Wt. Per Pkg.	Price/Pound Std.	Sub.
15 mono-filament	0.5Z	Semi-dull	Normal	Pirn	1 lb.	$5.25	$5.00
15 mono-filament	0.5Z	Dull	Normal	Pirn	1 lb.	5.30	5.05
15/2	0.5Z	Semi-dull	Normal	Pirn	1 lb.	7.37	6.70
18/2	0.5Z	Semi-dull	Normal	Pirn	1 lb.	6.65	6.10
20 mono-filament	0.5Z	Semi-dull	Normal	Pirn	1 lb.	4.95	4.50
20/2	0.5Z	Semi-dull	Normal	Pirn	1 lb.	5.55	5.05
30/4	0.5Z	Semi-dull	Normal	Pirn	1 lb.	2.62	2.42
30/6	0.5Z	Semi-dull	Normal	Pirn	2 lb.	2.36	2.21
40/8	0.5Z	Semi-dull	Normal	Pirn	2 lb.	2.01	1.81
50/13	0.5Z	Semi-dull	Normal	Pirn	2 lb.	1.91	1.76
200/16	0.9Z	Bright	Normal	Cone	4 lb.	1.49	1.44
200/16	0.5Z	Bright	Normal	Beam	....	1.54	....
200/34	0.9Z	Bright	Normal	Cone	4 lb.	1.49	1.44
200/34	0.5Z	Bright	Normal	Beam	....	1.54	....

Pirns charged at $.25 or $.45 each, depending upon type. Deposit refunded upon return of pirn in good condition. Cones are non-returnable. Beams and cradles are deposit carriers and remain property of American Enka Corporation.

Terms: Net 30 days. Minimum common carrier transportation charges will be pre-paid and absorbed to the first destination on or east of the Mississippi River. In pre-paying transportation charges, seller reserves the right to select the carrier used.

The Chemstrand Corp.

Current Prices
Effective December 19, 1956

Denier	Filament	Twist	Type*	Package	Standard	Second
10	1	O	SD	Bobbins	$8.42	$7.81
15	1	O	SD	Bobbins	5.25	5.00
15	1	O	D	Bobbins	5.30	5.00
15	1	O	D	Spools	5.41	....
30	10	Z	SD	Bobbins	2.36	2.21
30	10	Z	HSD	Bobbins	2.36	2.21
30	26	Z	SD	Bobbins	2.49	2.21
40	7	Z	SD	Bobbins	2.11	1.81
40	13	Z	SD	Bobbins	2.01	1.91
40	13	Z	SD	Spools	2.11	....
40	13	Z	D	Bobbins	2.06	1.96
40	13	Z	D	Spools	2.16	....
50	17	Z	SD	Bobbins	1.91	1.76
70	34	Z	SD	Bobbins	1.71	1.66
70	34	Z	B	Bobbins	1.71	1.66
70	34	Z	HB		1.76	1.66
70	34	Z	D	Spools	1.86	....
80	26	Z	SD	Bobbins	1.71	1.56
100	34	Z	SD	Bobbins	1.65	1.60
100	34	Z	HB	Bobbins	1.70	1.60
140	68	Z	SD	Bobbins	1.60	1.55
200	34	Z	B	Bobbins	1.49	1.44
200	68	Z	SD	Bobbins	1.56	1.46
210	34	Z	HB	Bobbins	1.49	1.44
210	34	Z	HB	Spools	1.54	....
210	34	Z	HB	Beams	1.54	....
260	17	Z	HB	Bobbins	1.49	1.39
260	17	Z	HB	Spools	1.54	....
420	68	Z	HB	Bobbins	1.39	1.29
630	102	Z	HB	Bobbins	1.39	1.29
840	136	Z	HB	Tubes	1.34	1.24
840	140	Z	HB	Beams	1.30	1.20
840	140	Z	HB	Tubes	1.30	1.20

*Types: D—Dull; SD Semi-dull; B—Bright; H—High tenacity.

Bobbins are invoiced at 25¢ or 45¢ each, depending on type; tubes are invoiced at 40¢ each; spools invoiced at $77.00 and $95.00 depending on type; and beams and crates for beams are invoiced at $220 and $25 respectively.

Prices subject to change without notice.

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.
Current Prices — Nylon Yarn

Denier & Filament	Turns/Inch & Twist	Type	Package	1st Grade	2nd Grade
7-1	0	200	Bobbin	$9.47	$8.82
10-1	0	200	Bobbin	8.42	7.82
12-1	0	200	Bobbin	7.35	6.85
15-1	0	200	Beam	5.36	....
15-1	0	200	Bobbin	5.25	5.00
15-1	0	680	Beam	5.41	....
15-1	0	680	Bobbin	5.30	5.00
20-1	0	200	Bobbin	4.95	4.50
14-2	0.2Z	200	Bobbin	7.90	7.30
17-2	0.2Z	200	Bobbin	7.05	6.50
20-2	0.2Z	200	Bobbin	5.55	5.05
15-3	0.2Z	200	Bobbin	6.10	5.60
21-3	0.2Z	200	Bobbin	5.48	5.05
20-7	0.5Z	200	Bobbin	2.91	2.61
20-7	0.5Z	200	Beam	3.02	....
20-7	0.5Z	680	Bobbin	2.96	2.61
20-7	0.5Z	680	Beam	3.07	....
20-20	0.7Z	209	Bobbin	6.00	....
28-4	0.2Z	200	Bobbin	2.81	2.61
30-10	0.5Z	200	Bobbin	2.36	2.21
30-10	0.5Z	200	Tricot Bms.	2.46	....
30-10	0.5Z	680	Bobbin	2.41	2.21
30-10	0.5Z	680	Tricot Bms.	2.51	....
30-26	0.5Z	200	Bobbin	2.49	2.21
40-1	0	100	Bobbin	4.03	3.75
40-7	0.5Z	200	Bobbin	2.11	1.81
40-13	0.5Z	200	Bobbin	2.01	1.91
40-13	0.5Z	200	Tricot Bms.	2.11	....
40-13	0.5Z	400	Bobbin	2.13	1.90
40-13	0.5Z	680	Bobbin	2.06	1.96
40-13	0.5Z	680	Tricot Bms.	2.16	....
40-34	0.5Z	200	Bobbin	2.21	1.81
50-10	0.5Z	200	Bobbins	2.11	1.76
50-17	0.5Z	200	Bobbin	1.91	1.76
50-17	0	200	Tubes	1.91	1.76
50-17	0.5Z	680	Bobbin	2.01	1.76
60-20	0.5Z	200	Bobbin	1.82	1.65
70-17	0.5Z	200	Bobbin	1.71	1.66
70-34	0	100	Tubes	1.71	1.66
70-34	0.5Z	100/200	Bobbin	1.71	1.66
70-34	0	200	Tubes	1.71	1.66
70-34	0.5Z	300	Bobbin	1.76	1.66
70-34	0.5Z	680	Bobbin	1.76	1.66
70-34	0	680	Tubes	1.76	1.66
80-26	0.5Z	200	Bobbin	1.71	1.56
90-26	0.5Z	200	Bobbin	1.76	1.66
90-44	0.5Z	200	Bobbin	1.86	1.76
100-34	0.5Z	200	Bobbin	1.65	1.60
100-34	0.5Z	300	Bobbin	1.70	1.60
100-34	0	300	Tubes	1.70	1.60
100-34	0.5Z	680	Bobbin	1.70	1.60
100-50	0.5Z	200	Bobbin	1.71	1.60
140-68	0.5Z	100	Bobbins	1.60	1.55
140-68	0	200	Tubes	1.60	1.55
140-68	0.5Z	200	Bobbin	1.60	1.55
140-68	0.5Z	300	Bobbin	1.65	1.55
200-20	1Z	100	Bobbin	1.49	1.44
200-34	0	100	Tubes	1.49	1.44
200-34	0.7Z	100	Bobbin	1.49	1.44
200-34	0.7Z	680	Bobbin	1.54	1.44
200-68	0.7Z	200	Bobbin	1.56	1.46
210-34	0	300	Tubes	1.49	1.44
210-34	0.7Z	300	Bobbin	1.49	1.44
210-34	0.7Z	300	Beam	1.54	....
210-34	0.7Z	330	Bobbin	1.59	1.44
260-17	1Z	300	Bobbin	1.49	1.39
400-68	0.7Z	100	Bobbin	1.39	1.29
420-68	1Z	300	Bobbin	1.39	1.29
520-34	1Z	300	Bobbin	1.39	1.29
780-51	1Z	300	Bobbin	1.39	1.29
800-140	0.5Z	100	Bobbin	1.39	1.29
840-140	0.5Z	300/700	Al. Tbs	1.30	1.20
840-140	0.5Z	300/700	Beam	1.30	....

Color-Sealed Yarn

Denier & Filament	Turns/Inch & Twist	Type	Package	1st Grade	2nd Grade
30-10	0.5Z	140	Bobbin	$2.71	$2.56
40-13	0.5Z	140	Bobbin	2.36	2.16
70-34	0.5Z	140	Bobbin	2.06	2.01
100-34	0.5Z	140	Bobbin	2.00	1.95
100-34	0	140	Tubes	2.00	1.95
200-34	0.7Z	140	Bobbin	1.84	1.79
260-17	1Z	140	Bobbin	1.84	1.79

Industrial Yarn				Price/Lb.
2520-420	0	300/700	Paper Tube	$1.27
4200-700	0	300/700	Paper Tube	1.25
5040-840	0	300/700	Paper Tube	1.25
7560-1260	0	300/700	Paper Tube	1.24
10080-1680	0	300/700	Paper Tube	1.24
15120-2520	0	300/700	Paper Tube	1.23

These prices are subject to change without notice. Terms: Net 30 Days.

Types

Type 100—Bright, normal tenacity.
Type 140—Bright, color-sealed, black, normal tenacity.
Type 200—Semidull, normal tenacity.
Type 209—Semidull, normal tenacity.
Type 300—Bright, high tenacity.
Type 330—Bright, high tenacity, more heat & light resistant.
Type 400—Semidull, high tenacity.
Type 680—Dull, normal tenacity.
Type 700—Bright, high tenacity.

Freight Terms—Terms are F.O.B. shipping point, freight prepaid our route to points east of the Mississippi River within the continental limits of the United States, for points west of the Mississippi River freight allowed to the Mississippi River crossing nearest purchaser's mill if shipped overland, or port of exit of purchaser's choice east of Mississippi River.

Following are invoiced as a separate item.
Bobbins—25 cents or 45 cents depending on type
Aluminum Tube—40¢ each
Draw Winder Tubes—$.70 or $1.00 depending on type
Tire Cord Beams—$220.00 each
Cradles for Tire Cord Beams—$115.00 each
Tricot Beams—$95.00 each
Cradles for Tricot Beams—$130.00 each
(Beams and Cradles are deposit carriers and remain the property of E. I. du Pont de Nemours & Co., Inc.)

POLYESTER E. I. du Pont de Nemours & Co.

Textile Fibers Dept.
Current Prices — "Dacron"*

Denier & Filament	Turns/Inch	Luster	Type*	Tubes 1st Gr.
30-14	0	Bright	55	$2.81
30-20	0	Semidull	56	2.81
40-27	0	Semidull	56	2.41
40-27	0	Bright	55	2.41
40-27	0	Dull	57	2.46
70-34	0	Semidull	56	2.01
70-14	0	Bright	55	2.01
70-34	0	Bright	55	2.01
70-34	0	Dull	57	2.06
100-34	0	Semidull	56	1.94
140-28	0	Bright	55	1.89
150-34	0	Semidull	56	1.91

Carl O. Kingsbury has retired from his position as New Orleans Sales Branch Manager for Solvay Process Div., Allied Chemical & Dye Corp. He has been succeeded by **Charles E. Varn.**

A. C. Emelin

Harold E. Smith has been elected chairman of the board of directors of Wallerstein Co., Inc. **Arthur C. Emelin** succeeds Mr. Smith as president and chief executive officer of the company.

Dr. John C. Lawler has been named special projects coordinator of the dyestuff and chemical division of General Aniline & Film Corp.

G. W. Bricker, Jr.

George W. Bricker, Jr. has resigned from the vice presidency of organization planning at Celanese Corp. of America and has entered the field of independent management consulting.

Dr. Giuliana Tesoro has been appointed to the newly created position of head of organic research at J. P. Stevens & Co.

Louise Williams Beall has joined the staff of the Tufted Textile Manufacturers Association as director of publicity.

Robert L. Duncan has been named sales manager at Union Carbide Chemicals Co., division of Union Carbide Corp.

Deaths

Harry Roebke, National Aniline Division, Allied Chemical Corp. Mr. Roebke had been with the company since 1919.

Harold E. Smith, chairman of the board of Wallerstein Co., Inc. He had been with the company since 1928.

220-50	0	Bright	51	1.84
250-50	0	Bright	55	1.86
1100-250	0	Semidull	59	1.50
1100-250	0	Bright	51	1.50

Terms: Net 30 Days.

Domestic Freight Terms are F.O.B. shipping point, freight prepaid our route to points east of the Mississippi River within the continental limits of the United States, for points west of the Mississippi River freight allowed to the Mississippi River crossing nearest purchaser's mill if shipped overland, or port of exit of purchaser's choice east of Mississippi River.

Yarn Types

• Type:
Type 51—Bright, high tenacity.
Type 55—Bright, normal tenacity.
Type 56—Semidull, normal tenacity.
Type 57—Dull, normal tenacity.
Type 59—Semidull, high tenacity.

Tubes are invoiced as a separate item at $.70 each.

• "DACRON" is DuPont's registered trade-mark for its polyester fiber.

SARAN FIBERS

The Saran Yarns Company — Odenton, Maryland

The Hall Company (Selling Agent)
41 East 42 Street, New York 17, N. Y. (Oxford 7-8996)

Current Prices:

CONTINUOUS FILAMENT

Type	Twist p. i.	Natural	Colors
1240/10	3	$1.32	$1.37
750/20•	3	1.75	1.80

• For filter fabrics and other industrial purposes only.
F.O.B. Odenton, Maryland.
Terms: Net 30 days.

NON CELLULOSIC STAPLE & TOW ACRYLIC

The Chemstrand Corp.

Current Prices

"Acrilan"

Effective October 1, 1957

	Regular Acrilan	Acrilan 16
2.0 denier Semi-Dul and Bright staple & tow	$1.24	$1.24
2.5 denier Hi-Bulk Bright and Semi-dull staple and tow	1.16	1.16
3.0 denier Bright & Semi-dull staple & tow	1.16	1.16
5.0 denier Bright & Semi-dull staple & tow	1.16	1.16
8.0 denier Bright & Semi-dull staple	1.16	1.16
15.0 denier Bright & Semi-dull staple	1.01	1.05

Terms: Net 30 days. Freight prepaid to points east of the Mississippi River.

The Dow Chemical Company

Textile Fibers Department
Current Prices

"Zefran"*

2.0 denier Semidull & Bright—Staple only	$1.33
3.0 denier Semidull & Bright—Staple only	1.28
6.0 denier Semidull & Bright—Staple only	1.20

Terms: Net 30 days.

Transportation Terms: F.O.B. shipping point—Freight prepaid our route to points east of the Mississippi River within the continental limits of the U. S., for points west of the Mississippi River crossing nearest purchaser's mill if shipped overland or port of exit of purchaser's choice east of the Mississippi River.

• "Zefran" is Dow's registered trademark for its acrylic alloy fiber.

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.
Current Prices

"Orlon"** Acrylic Staple & Tow

Type 42	1st Grade
1.0 Denier Semidull & Bright—Staple only	$1.48
2.0 Denier Semidull & Bright	1.33
3.0 Denier Semidull & Bright	1.28
3.0 Denier Semidull Color-sealed Black	1.63
6.0 Denier Semidull & Bright	1.20
6.0 Denier Color-sealed Black	1.55
4.5 Denier Semidull	1.20
10.0 Denier Semidull	1.20

Tow—Total Denier 470,000
Staple Lengths—1½", 2", 2½", 3", 4½"
High Shrinkage Staple same price as Regular Staple

Type 39 $1.06
This product is designed for *woolen system spinning* and is a blend of deniers (average 4.2) with a variable cut length.

Type 39A $1.14
This product is designed for *woolen system spinning* and is a blend of predominately fine deniers (average 2.4) with a variable cut length.

Type 39B $1.01
This product is designed for *woolen system spinning* and is a blend of predominately heavy deniers (average 6.5) with a variable cut length.

F.O.B. Shipping Point—Freight prepaid our route to points east of the Mississippi River within the continental limits of the United States, for points west of the Mississippi River freight allowed to the Mississippi River crossing nearest purchaser's mill if shipped overland, or port of exit of purchaser's choice east of Mississippi River.

Terms: Net 30 Days.

•• "ORLON" is DuPont's registered trade-mark for its acrylic fiber.

Eastman Chemical Products, Inc.
Tennessee Eastman Co.

Effective November 15, 1956

"Verel"*

Deniers	Dull and Bright
2, 3, 5 and 8	$1.10 per pound

Prices are subject to change without notice.

Terms: Net 30 days. Payment—U. S. A. dollars.

Transportation charges prepaid or allowed to destination in the United States east of the Mississippi River. Seller reserves the right to select route and method of shipment. If buyer requests and seller agrees to a route or method involving higher than lowest rate buyer shall pay the excess of transportation cost and tax.

• "Verel" is a trade-mark of the Eastman Kodak Co.

Union Carbide Chemicals Co.

Div. Union Carbide Corp.
Textile Fibers Dept.
Effective October 1, 1957

Dynel Staple & Tow

Natural Dynel	
3 and 6 Denier, Staple and Tow	1.40 per lb.
24 Denier, Staple and Tow	1.05 per lb.
Dynel Spun with Light Colors: Whitened, Blond, or Gray	
3 and 6 Denier, Staple and Tow	1.30 per lb.
Dynel Spun with Dark Colors: Black, Charcoal, and Brown	
3 and 6 Denier, Staple and Tow	1.40 per lb.
Dynel Type 63 Bulking Fiber (3 Denier only)	Add $.05 per lb. to above prices

Prices are quoted f.o.b. South Charleston, W. Va.

NYLON

American Enka Corp.

Enka Nylon (Nylon Six Staple)

Denier	Luster	Length (Inches)	Price per pound
3	semi-dull	1⅛, 1½, 2, 2⅝, 3, 4½	$1.28
6	bright	3, 4½	1.28
8	bright	2⅝	1.20
10	bright	3	1.20
15	bright	3	1.20
15	semi-dull	3	1.20

Deniers and lengths of staple not listed above are available upon special request.

Terms: Net 30 days. Minimum common carrier transportation charges will be prepaid and absorbed to the first destination on or east of the Mississippi River. In prepaying transportation charges, seller reserves the right to select the carrier used.

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.
Current Prices

Nylon Staple and Tow

Denier	Type	Staple Lengths	Tow Bundle	1st. Grade Price/Lb.	2nd Grade Staple Only
1.5	200	1½"—4½"	None made	$1.33	$1.18
1.5	201	1½"—4½"	None made	1.35	1.20
3.0	100/200	1½"—4½"	430M	1.28	1.13
3.0	101/201	1½"—4½"	455M	1.30	1.15
6.0	100	1½"—4½"	330M	1.28	1.13
6.0	101	1½"—4½"	345M	1.30	1.15
15.0	100	1½"—6½"	425M	1.20	1.05
15.0	101	1½"—6½"	None made	1.22	1.07
15.0	600	1½"—6½"	425M	1.22	1.07
15.0	601	1½"—6½"	None made	1.24	1.09

Staple lengths are restricted to the range shown opposite each denier above. The actual cut lengths within these ranges are as follows:

1⅛, 1½, 2, 2⅝, 3, 4½ and 6½

Types

Type 100 Bright, normal tenacity, not heatset.
Type 101 Bright, normal tenacity, heatset.
Type 200 Semidull, normal tenacity, not heatset.
Type 201 Semidull, normal tenacity, heatset
Type 600 Dull normal tenacity, not heatset.
Type 601 Dull normal tenacity, heatset.
These prices are subject to changes without notice.
Terms—Net 30 Days.
Freight Terms—Terms are F.O.B. shipping point, freight prepaid our route to points east of the Mississippi River within the continental limits of the United States, for points west of the Mississippi River freight allowed to the Mississippi River crossing nearest purchaser's mill if shipped overland, or port of exit of purchaser's choice east of Mississippi River.

Industrial Rayon Corp.

Effective November 29, 1956

Nylon Staple

1.5 denier	$1.33 per lb.
2, 3 and 6 denier	1.28 per lb.
8, 15 and 22 denier	1.20 per lb.

Bright, semi-dull, and full dull required length.

Terms: Net 30 days f.o.b. point of shipment; title to pass to buyer on delivery of goods to carrier. Domestic transportation charges prepaid with transportation allowed at lowest published rate to all points east of the Mississippi River.

Europe

(Continued from Page 52)

A Danish-German-Swedish textile group has submitted to Denmark plans to construct a nylon and perlon plant at Silkeborg at a cost of some 20 million kroner. Independently, the Danish Trade Ministry is studying the feasibility of building a rayon filament plant at Silkeborg.

New German Fair

The Frankfort International Fair, which has just shown an absorbent vinyl-coated fabric for use in shoes, will be the home of a new fabric and dress exposition similar to Milan's Mita exhibit. Frankfort's first Interstoff Fair will take place in July; a second may be held in about six months. The vinyl lining firm, Goppinger Plastics, is said to have sent samples to U. S. shoe makers. The material is called Hygroled.

Nylon Bedsheets in U.K.

British Nylon Spinners Ltd. has conducted a hotel survey to see how guests react to nylon bedsheets. As a result among 14 London and provincial hotels—which were provided sheets made by four manufacturers—67% of the guests said they liked the looks of the sheets, and 85% liked the comfort. Hotel owners said they saved money on laundry.

POLYESTER

E. I. du Pont de Nemours & Co.

Textile Fibers Dept.
Current Prices

"Dacron"* Staple and Tow

Denier	Luster	Type	Length	Tow Bundle	1st Gr.
1.25	Semidull	54	1¼"-3"	375M	$1.56
1.5	Semidull	54	1¼"-3"	600M	1.51
3.0	Semidull	54	1¼"-4½" & Tow	375M-500M	1.41
4.5	Semidull	54	1¼"-4½" & Tow	375M-500M	1.41
6.0	Semidull	54	1¼"-4½" & Tow	375M-500M	1.41

Terms: Net 30 Days.
F. O. B. Shipping Point—Freight prepaid our route to points east of the Mississippi River-within the continental limits of the United States, for points west of the Mississippi River freight allowed to the Mississippi River crossing nearest purchaser's mill if shipped overland, or port of exit of purchaser's choice east of Mississippi River.

POLYVINYL ACETATE

American Viscose Corp.

Effective October 1, 1956

"Vinyon"® Staple

3.0 denier	½" unopened	$.80 per lb.
3.0 "	1¼" unopened	.80 per lb.
3.0 "	1¼" opened	.90 per lb.
3.0 "	2" opened	.90 per lb.
3.0 "	2" unopened	.80 per lb.
5.5 "	1" opened	.90 per lb.
5.5 "	3½" opened	.90 per lb.
5.5 "	3½" unopened	.80 per lb.

Terms: Net 30 days.

SARAN FIBERS

The Saran Yarns Company — Odenton, Maryland

The Hall Company (Selling Agent)
41 East 42 Street, New York 17, N. Y. (Oxford 7-8996)
Current Prices:

Saran Staple

Type	Denier	Natural	Colors
2N	22	$0.70	$0.75
2N	16	.74	.79
3Q*	22	.63	.67

In any staple length 1½ to 6". Also 45 denier, 7" cut.
* For carpets and industrial fabrics.
F.O.B. Odenton, Maryland.
Terms: net 30 days.

METALLICS

The Dobeckmun Company

Lurex Yarn Division Current Prices

Lurex-MM (Made with Metalized Mylar)

	Guage	Width	Yield	Price Gold & Silver	Price Standard Colors and Multicolors
Silver Only	100	1/128"	62,000	$13.40	—
	100	1/64"	31,000	10.40	—
	100	1/50"	24,000	10.15	—
	100	1/32"	15,500	9.80	—
	150	1/128"	38,000	10.90	—
	150	1/100"	29,500	10.65	On Request
	150	1/64"	19,000	8.35	
	150	1/50"	14,500	8.20	
	150	1/32"	9,500	8.05	
	150	1/16"	4,750	7.90	

Lurex-MF (Mylar-Foil-Mylar) April 28, 1958

Guage	Width	Yield	Price Gold & Silver	Price Standard Colors and Multicolors
150	1/100"	25,000	$8.95	$9.30
150	1/64"	17,200	5.70	6.30
150	1/50"	12,500	5.60	6.15
150	1/32"	8,600	5.50	6.00
150	1/16"	4,000	5.45	5.85

Lurex (Regular, "Butyrate") July 1, 1957

Guage	Width	Yield	Price Gold & Silver	Price Standard Colors and Multicolors
260	1/100"	16,400	$4.50	On Request
260	1/80"	13,000	4.00	
260	1/64"	10,500	3.35	
260	1/50"	8,200	3.25	
260	1/32"	5,200	3.00	
260	1/16"	2,600	2.85	

A. Lurex, Lurex-MM and Lurex-MF are the registered trade-marks of The Dobeckmun Company. Lurex-MM is covered by U. S. Patent #2714569, Serial #267,108. Multicolor is Patent Pending. Mylar is DuPont's polyester film.
B. Standard Colors:

L-941	Scarlet	L-981	Pink Opal
L-984	Turquoise	L-942	Peacock Blue
L-940	Emerald Green	L-983	Violet
L-861	Bronze	L-978	Gunmetal
2A-1	Multicolor	3A-2	Multicolor
4A-5	Multicolor	4A-7	Multicolor
6A-1	Multicolor	6A-2	Multicolor
L-869	Fuchsia	L-982	Blueflower
L-935	Royal Blue	L-980	Apple Green
L-1008	Purple	L-933	Copper
L-850	Jet	L-1007	Green Gold
3A-3	Multicolor	1A-3	Multicolor
4A-14	Multicolor	4A-4	Multicolor
6A-3	Multicolor	4A-15	Multicolor
		3A-4	Multicolor

C. Other colors available on a *custom basis only* for which a minimum firm order of 150 lbs. is required.
Regular color prices will apply.
After approval of color swatch, one sample run of 10 lbs. or over can be ordered with an up-charge of $2.00 per lb. over regular color prices.
D. Lurex-MM, Lurex-MF and regular Lurex is supplied on disposable spools having plastic end plugs with ⅜" I.D. holes. Spools contain approx. 1 lb. of yarn.
E. Cases contain 6 "LUR-PAKS". Each "LUR-PAK" contains 6 one pound spools.
Weight Data: 1 case 1 lb. spools, gross wt. approx. 44 lbs.—tare wt. approx. 10 lbs.—net wt. approx. 34 lbs.
F. Yields are subject to variation of plus or minus 5%.
G. Terms: 1% 10 days from date of invoice, net 30 days, F.O.B. Cleveland, Ohio. Minimum freight allowed on shipments of 100 pounds and over.
H. Quantity Discount 2,000 to 5,000 lbs., 3%—5,000 lbs. and over, 5%.

Lurex Staple

	#260 Butyrate	#150-MF	#150-MM	#100-MM
Straight	$3.00	$5.55	$7.65	$9.50
Crimped	3.10	5.65	7.75	9.60

A. Widths—1/64", 1/100", 1/120", 1/200".
B. Lengths—½" to 6½" in increments of ½".
C. Colors—Gold, Silver, others on request.
D. Put-Up: Cartons containing approx. 20# net, 23# gross.
E. Terms: 1% 10 days, net 30 days, F.O.B. Haverhill, Mass. No freight allowed.

Lurex Metalflake

Lurex is available in a series of types of sizes in precision squares, hexagons, rectangles and stars. Further information on request.

Fairtex Corporation

1808 Liberty Life Building
Charlotte 2, N. C.
January 23, 1958

1. Fairtex No. 260 (butyrate)—gold, silver and copper.

Width	Yield (Per Pound)	Price (Per Pound)
1/120"	21,000	$4.75
1/80"	13,000	4.00
1/64"	10,800	3.35
1/50"	8,400	3.25
1/32"	5,300	3.00
1/16"	2,600	2.85
1/8"	1,300	2.70

2. Fairtex with Mylar* No. 100V (2 ply), (metallized type)—silver only.

1/100"	48,000	$13.25
1/80"	37,000	11.40
1/64"	31,000	10.40
1/50"	24,200	10.15
1/32"	15,500	9.80

Fairtex with Mylar* No. 150V (3 ply), (metallized type)—gold, silver and copper.

1/100"	32,000	$10.65
1/80"	25,000	9.25
1/64"	21,000	8.35
1/50"	16,400	8.20
1/32"	10,500	8.05

3. Fairtex with Mylar* No. 150F, (foil type)—gold, silver and copper.

1/100"	28,000	$7.75
1/80"	21,450	7.00
1/64"	17,200	5.70
1/50"	13,400	5.60
1/32"	8,600	5.50
1/16"	4,300	5.45

4. General Information:
a. Staple available upon request on above types.
b. Above types also available supported with Nylon, Fortisan or other synthetics.
c. Colors available on above upon request at slight additional cost.
d. Quantity discounts on above prices.
e. Fairtex is supplied on 1 lb. disposable spools—48 spools per case and on ½ lb. disposable spools—100 spools per case.

Metlon Corp.

Effective April 28, 1958

Metlon*-Mylar** Price List

Metlon* F-Mylar (Foil Laminated)

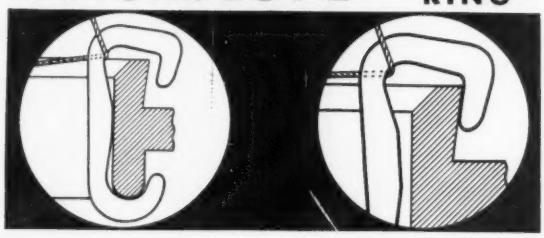
Width	Yards Per Lb. (Plus or minus 5%)	Price Per Lb. Gold or Silver	Price Per Lb. Standard Colors
1/120"	32,200	$9.80	$10.15
1/80"	21,500	7.10	7.45
1/64"	17,200	5.70	6.30
1/50"	13,500	5.60	6.15
1/32"	8,600	5.50	6.00
1/16"	4,300	5.50	6.00
1/8"	2,150	5.50	6.00

Quantity Discounts: 2,000 lbs.—3%
5,000 lbs.—5%

To earn discount, quantity ordered must be withdrawn within 90 days from date of order.
Terms: 1% 10 days, net 30. F.O.B. Providence, Rhode Island. Minimum freight allowed on shipments of 100 lbs. or over.
Put Up: Plastic Disposable Spools.
Minimum Order: One case (approximately 40 lbs. net). Smaller quantities subject to surcharge.
Palletizing: On request, shipments of 4 cases or more will be palletized without additional charge.
Prices apply to continental U. S. A., Canada and Mexico.
* Metlon's registered trademark for non-tarnishing metallic yarn.
** DuPont's registered trademark for polyester film.

For top speed

"BACKSLOPE" TWISTER RING



KEEPS NYLON TRAVELERS ON!

As nylon traveler flexes at high speeds, DIAMOND FINISH Backslope* design prevents it from flying off.

REQUEST LITERATURE AND QUOTATION

*Coats and Clark Patent

WHITINSVILLE (MASS.)

SPINNING RING CO.

DIAMOND FINISH

Makers of Spinning and Twister Rings since 1873

Rep. for the Carolinas & Va.: W. K. SHIRLEY, P.O. Box 406, Belmont, N. C.
For Ala., Ga., & Tenn.: P. C. EVERETT, 369 Meadowbrook Dr. NE, Atlanta

N E W

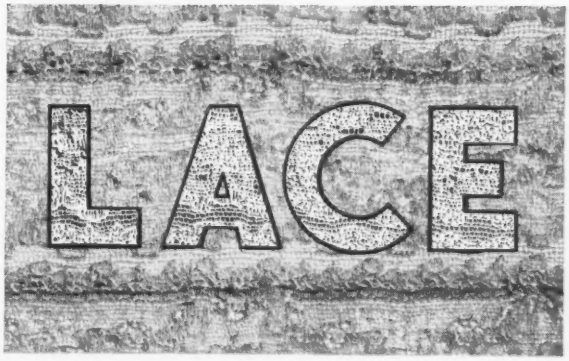
LOW COST ALUMINUM TWISTER BOBBIN

New aluminum twister bobbin of high strength will not warp or fail despite repeated steamings of highest strength nylon yarns. Of two pound capacity, this new bobbin is dynamically balanced and anodized against corrosion yet is less costly than ordinary bobbins. Spindle guide tube goes all the way through. Grip knob with identification ring simplifies handling without need to touch yarn. Available in a variety of sizes. Write for details today.

BW MACK **ALLENTOWN BOBBIN WORKS, INC.**

ALLENTOWN PENNSYLVANIA

"Graphtex" FOR



"Graphtex" is THE Scour for Removing Graphite from Nylon Lace!

LeaTex

LEATEX CHEMICAL COMPANY
2727 N. HANCOCK ST., PHILADELPHIA, PA.

Reynolds Metals Co.

Reynolds Aluminum Yarns
January 29, 1958
200 Series

	PRODUCT NUMBER	WIDTH	APPROX. YIELDS IN LINEAL YDS. PER LB.	¢ PRICE PER POUND—48 THRU 1,999 POUNDS (1) Standard Colors	(2) Special Colors	(3) Non-Standard Colors	(4) Multi-Colors
Acetate-Butyrate	204	1/8"	1,350	$2.80	$3.05	$3.05	$3.05
	204	1/16"	2,700	2.85	3.10	3.10	3.10
	204	1/32"	5,400	3.00	3.25	3.25	3.25
	204	1/50"	8,450	3.25	3.50	3.50	3.50
	204	1/64"	10,800	3.35	3.60	3.60	3.60
	204	1/80"	13,500	4.00	4.25	4.25	4.25
Mylar-Foil	230	1/8"	1,450	$5.60	$5.95	$5.95	$5.95
	230	1/16"	2,900	5.75	6.10	6.10	6.10
	230	1/32"	5,800	5.90	6.25	6.25	6.25
	230	1/50"	9,050	6.05	6.40	6.40	6.40
	230	1/64"	11,600	6.20	6.55	6.55	6.55
	230	1/80"	14,450	7.25	7.60	7.60	7.60
Mylar-Foil	235	1/8"	2,150	$5.35	$5.70	$5.70	$5.70
	235	1/16"	4,300	5.45	5.85	5.85	5.85
	235	1/32"	8,600	5.50	6.00	6.00	6.00
	235	1/50"	13,400	5.60	6.15	6.15	6.15
	235	1/64"	17,200	5.70	6.30	6.30	6.30
	235	1/80"	21,450	7.00	7.35	7.35	7.35
Mylar-Foil	215	1/8"	1,730	$5.30	$5.65	$5.65	$5.65
	215	1/16"	3,460	5.45	5.80	5.80	5.80
	215	1/32"	6,920	5.60	5.95	5.95	5.95
	215	1/50"	10,800	5.75	6.10	6.10	6.10
	215	1/64"	13.840	5.90	6.25	6.25	6.25
	215	1/80"	17,270	6.95	7.30	7.30	7.30

Reymet Staple: Foil Mylar $6.00 per lb.

Metallized Mylar: $10.50 per lb. These can be cut in width to 1/220", also full range of Colors.

(1) Standard Yarn Colors: Silver and Gold.

¢ (2) Special Yarn Colors: Refer to Products Supervisor, Special Foil Products located at Richmond, Va.

(3) Non-Standard Yarn Colors: Refer to Products Supervisor, Special Foil Products located at Richmond, Virginia.

(4) Multi-Colors: One or two colors.

¢ Quantity Discounts to be applied on invoice:
5,000 lbs. and over less 5%.
2,000 thru 4,999 lbs. less 3%.

Items can be grouped for quantity price provided each is held to a minimum of 250 pounds. No grouping for less than 250 pounds.

Minimum acceptable orders for standard and special colors is 48 pounds per size and color.

Minimum acceptable order for non-standard colors is 150 pounds per size and color.

AVAILABLE PACKAGES:

Following types available:

Die-cast aluminum spools with straight flange; 3" O.D., 3¼" traverse. Each spool contains approximately 8 ounces of yarn. These spools, billed at $.40 each are returnable for credit in good condition, F.O.B. Reynolds Metals Company, 11th & Byrd Streets, Richmond, Virginia.

No charge returnable plastic spools with 3¼" O.D., 4½" traverse. Each spool contains approximately 1 pound of yarn. These spools are returnable for credit @ $.02 each F.O.B. customer's plant. Subject to inspection and count of seller.

Tin spools with straight flange with 3" O.D., 3¼" traverse. Each spool contains approximately 8 ounces of yarn. These spools, billed at $.10 each are returnable for credit in good condition, F.O.B. Reynolds Metals Company, 11th & Byrd Streets, Richmond, Virginia.

PACKING:

36 spools per corrugated fiber carton, size 18-1/16" x 14-1/16" x 11".

ORDERING DATA:

Specify Product, Width, Color and Type of Spool.

Aluminized Series

PRODUCT NUMBER	WIDTH	APPROX. YIELDS IN LINEAL YARDS PER POUND	PRICE PER POUND 48 THRU 1999 POUNDS
250	1/32"	10,000	$8.05
250	1/50"	15,650	8.20
250	1/64"	20,000	8.35
250	1/80"	25,000	10.25
255	1/32"	15,500	$9.80
255	1/50"	24,200	10.15
255	1/64"	31,000	10.40
255	1/80"	38,700	12.40

250 offered in silver and gold.

255 offered in silver only.

Quantity discounts to be applied on invoice:
2,000 lbs. and over less 3%.
5,000 lbs. and over less 5%.

Sizes can be grouped for quantity price providing each is held to a minimum of 250 lbs.

No grouping for less than 250 lbs. Minimum acceptable order is 48 pounds per item.

AVAILABLE PACKAGES:

Following types available.

Die-cast aluminum spools with straight flange, 3" O.D., 3¼" traverse. Each spool contains approximately 8 ounces of yarn. These spools, billed at $.40 each, are returnable for credit in good condition, F.O.B. Reynolds Metals Company, 11th and Byrd Streets, Richmond, Virginia.

No charge returnable plastic spools with 3¼" O.D., 4½" traverse. Each spool contains approximately 1 pound of yarn. These spools are returnable for credit @ $.02 each, F.O.B. customer's plant. Subject to inspection and count of seller.

Tin spools with straight flange with 3" O.D., 3¼" traverse. Each spool contains approximately 8 ounces of yarn. These spools, billed at $.10 each, are returnable for credit in good condition, F.O.B. Reynolds Metals Company, 11th and Byrd Streets, Richmond, Virginia.

PACKING:

36 spools per corrugated fiber carton, size 15¼" x 14½" x 11".

ORDERING DATA:

Specify Product, Color, Width, and Type of Spool.

Business Service Section

Exclusively for Business, Laboratory and Mill Services; Positions and Men Wanted; Business Opportunities; Mill Properties Wanted or For Sale; Reconditioned Machinery and Equipment, etc.

CLASSIFIED RATES
Per Inch
2 columns to the page, each column 8 inches deep

1	Inch	$8.00
2	Inches	15.00
3	Inches	22.50
4	Inches	28.00
5	Inches	35.00
6	Inches	42.00
7	Inches	49.00
8	Inches	52.00

Calendar of Coming Events

Jun. 4—AATT monthly meeting. Della Robbia Room, Hotel Vanderbilt, New York, N. Y.
Jun. 4-7—Tufted Textile Manufacturers Association annual meeting. Daytona Beach, Fla.
June 6—AATCC Metropolitan Section annual outing. North Jersey Country Club, Wayne Township, N. J.
Jun. 6-7—AATCC Southeastern Section annual outing. Radium Springs, Ga.
June 6-8—AATCC Piedmont Section annual outing. Grove Park Inn, Asheville, N. C.
Jun. 9-Aug. 29—Gordon Research Conference on Textiles. Colby Junior College, New London, N. H.; New Hampton School, New Hampton, N. H.; Kimball Union Academy, Meriden, N. H.
Jun. 9-12—Materials Handling Exposition. Public Auditorium, Cleveland, Ohio.
June 10-20—Advanced Course in Quality Control by Statistical Methods. Purdue University, Lafayette, Ind.
June 13—AATCC Rhode Island Section annual outing. Wannamoisett Country Club Rumford, R. I.
June 16-27—Course in Woolen Yarn Manufacturing sponsored by Davis & Furber. Lowell Technological Institute, Lowell, Mass.
Jun. 19-21—Southern Textile Association annual convention. Grove Park Inn, Asheville, N. C.
Jun. 22-27—ASTM annual meeting. Hotel Statler, Boston, Mass.
Jul. 20-23—Textile Merchants and Associated Industries Exhibit. Sheraton-Jefferson Hotel, St. Louis, Mo.
Aug. 18-22—Massachusetts Institute of Technology summer program Techniques in Textile Research. M.I.T., Cambridge, Mass.
Sep. 3—AATT monthly meeting. Della Robbia Room, Hotel Vanderbilt, New York, N. Y.
Sep. 9-10—The Fiber Society, Inc. Montreal, Can. (Meeting place to be announced.)
Sept. 9-10—The Fiber Society, Inc. fall meeting. Queen Elizabeth Hotel, Montreal, Canada.
Sep. 11-12—Combed Yarn Spinners Association annual meeting. The Cloister, Sea Island, Ga.
Sep. 19-20—AATCC Piedmont Section. Hotel Charlotte, Charlotte, N. C.
Sep. 25-26—Northern Textile Association. Wentworth-by-the-Sea, Portsmouth, N. H.
Sep. 25-26—Textile Quality Control Association, fall meeting. Grove Park Inn, Asheville, N. C.
Oct. 1—AATT monthly meeting. Della Robbia Room, Hotel Vanderbilt, New York, N. Y.
Oct. 1-2—National Cotton Council, Chemical Finishing Conference. Washington, D. C.
Oct. 6-10—Southern Textile Exposition. Greenville, S. C.
Oct. 9-10—North Carolina Textile Manufacturers Association annual meeting. Carolina Hotel, Pinehurst, N. C.
Oct. 10—Southern Textile Overseers Association. Greenville, S. C.
Oct. 11—Textile Operating Executives of Georgia. A. French Textile School, Atlanta, Ga.
Oct. 14-17—ASTM Committee D-13 on Textiles. Sheraton-McAlpin Hotel, New York, N. Y.
Oct. 15-25—International Textile Machinery Exhibition. Belle View, Manchester, England.
Oct. 23-24—Southern Textile Methods and Standards Assoc. Clemson House, Clemson, S. C.
Oct. 25—Alabama Textile Operating Executives fall meeting. Thach Auditorium, Auburn, Ala.
Oct. 28-31—Carded Yarn Assoc. annual meeting. The Homestead, Hot Springs, Va.
Oct. 30-Nov. 1—AATCC National Convention. Hotel Conrad Hilton, Chicago, Ill.
Nov. 17-19—Narrow Fabrics Institute, annual meeting. Hotel Roosevelt, New York, N. Y.

Index to Advertisers

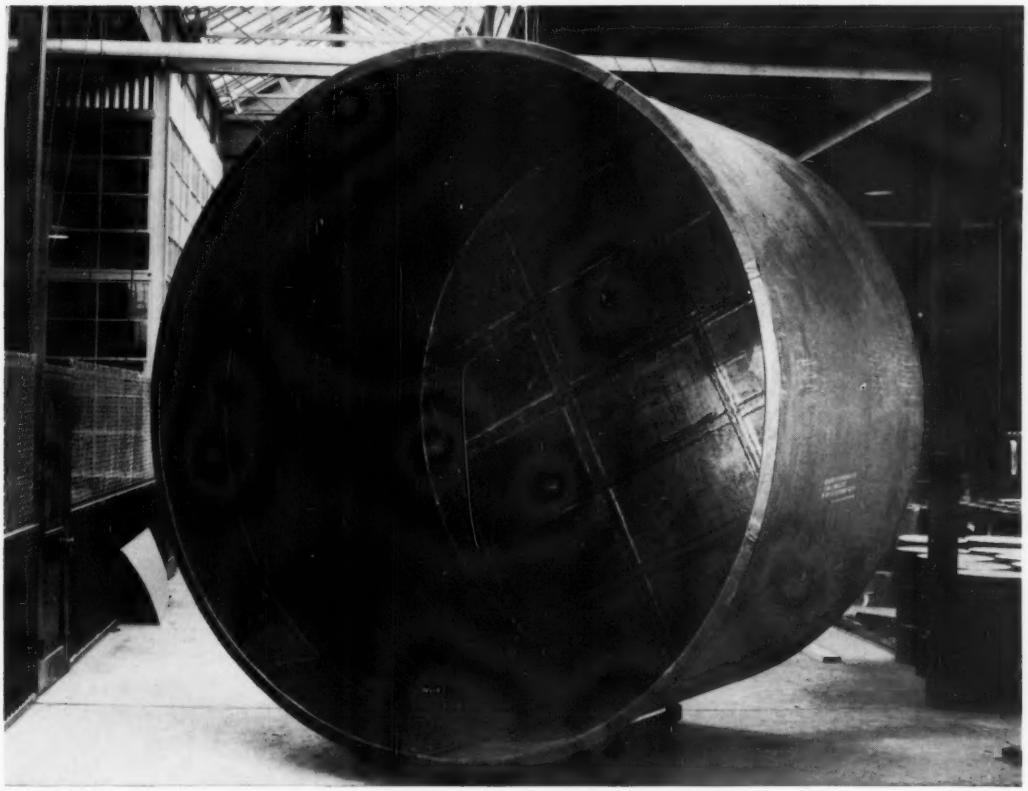
(*See previous or subsequent issues)

BUSINESS SERVICE

HERECROL

REG. U. S. PAT. OFF.

Self-curing SYNTHETIC RUBBER SHEET LINING



The CARBON STEEL TANK shown above was HERECROL lined in our shops and later installed in a Wisconsin Paper Mill for liquid alum storage. HERECROL Sheet Lining is available in ⅛″ and 3/16″ thickness. Application may be accomplished in the field as well as in our shop. The following is a selection of solutions which can safely be handled in HERECROL lined equipment:

ALUM SOLUTIONS • AMMONIA SOLUTIONS
COPPER SULFATE • FERRIC SULFATE
HYDROCHLORIC ACID • HYDROFLUORIC ACID
NITRIC ACID • SODIUM HYDROXIDE
PHOSPHORIC ACID • NICKEL SULFATE
ZINC CHLORIDE • ZINC SULFATE

The HERECROL Self-Curing Synthetic Rubber Sheet Lining can be applied to steel tanks and other equipment unlimited in size. The reason for this is that no special equipment to provide heat or pressure is required. Storage tanks, processing vessels, tank cars, trailer tanks, pipes, fans, blowers, and duct systems have been successfully processed.

HERESITE & CHEMICAL COMPANY

MANITOWOC, WISCONSIN

Eastern Division: 546 South Avenue, Garwood, N. J.

You can speed up many Textile Processes

WITH ALSIMAG® CUSTOM MADE

ROLLERS AND PULLEYS

The smooth AlSiMag Roller or Pulley type guide rolls as the yarn travels over it. The smoothness of the guide plus the rolling action enables you to obtain the least possible yarn tension. This can give you:

1. Greater speeds.
2. Better yarn control at higher speeds.
3. Less possibility of yarn or filament fracture.

AlSiMag Roller or Pulley type thread guides are custom made. They can be made for metal or AlSiMag axles for comparatively low speeds. At higher speeds it is advisable to carry these guides on oilite, ball, roller or other type of lubricated non-friction bearing. AlSiMag is harder than metals usually used for axles. AlSiMag is homogeneous, has no surface skin to wear through and cause guide failure.

GROOVES, SIZES, TOLERANCES. Since these AlSiMag guides are custom made, you may design for utmost performance. However, long multiple groove guides encounter the warpage problems inherent in ceramics.

If the length of the guide does not exceed the outer diameter by more than ten times, a normal camber of 0.006" can normally be expected. Example: ½" O.D. x 5" long with average number of grooves should be within a total of 0.030" camber. If closer tolerances are necessary, consult our engineers.

HAND MADE SAMPLES can be made to your design at reasonable cost. Try out your ideas and keep a record of the service of these super long wearing AlSiMag guides. Records indicate that you will find AlSiMag guides far lower in cost per pound of yarn processed.

A Subsidiary of Minnesota Mining and Manufacturing Company

AMERICAN LAVA CORPORATION

CHATTANOOGA 5, TENN.
57TH YEAR OF CERAMIC LEADERSHIP

SALES ENGINEERS: NEW ENGLAND: W. J. Geary, 27 Fairlawn St., Cranston, R. I., Williams 1-4177. NORTHEAST: J. S. Gosnell, 205 Walnut St., Livingston, N. J., 6-1260. SOUTHEAST: James W. Crisp, 409 Buncombe St., Apt. 9, Greenville, S. C., CEdar 9-8520. ALL OTHER AREAS: J. B. Shacklett, American Lava Corp., Chattanooga 5, Tenn., AMherst 5-3411. REPRESENTATIVES: CANADA: Ian M. Haldane & Co., P. O. Box 54, London, Ont. ALL OTHER COUNTRIES: Minnesota Mining & Mfg. Co., International Div., 99 Park Ave., New York, N. Y.